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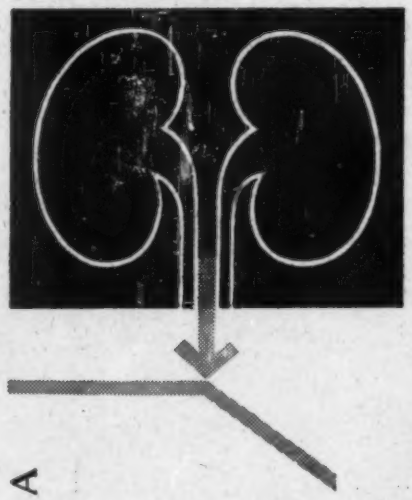

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AN EXPERIMENT IN MASS RADIOGRAPHY*

BY

J. B. COCHRAN, M.B., B.Sc., F.R.F.P.S., M.R.C.P.

W. BELL FLETCHER, F.S.S

AND

CHRISTOPHER CLAYSON, M.D., F.R.C.P.Ed. D.P.H.

From Lochmaben Chest Hospital, Dumfriesshire

From March to July, 1957, a chest *x*-ray survey was carried out in the burgh of Dumfries, in South Scotland, designed primarily as a controlled experiment to measure the influence of a preliminary census and of home-visiting on the population response to mass radiography. A further aim was to compare the prevalence of pulmonary tuberculosis in the burgh and in a near-by rural area surveyed by the same team in 1956 (Cochran *et al.*, 1957).

Methods

Burgh Surveyed.—Dumfries (estimated population mid-1957, 26,683) is a market town on the River Nith, in South-West Scotland, and is surrounded by rich farmland. At the turn of the century the main occupations were farming and tweed manufacture. During this century light industry has developed in the area. Within the town there is a factory for milk canning. A rubber factory and a large chemical works are located just outside the burgh boundary. Tweed manufacture has largely been replaced by hosiery and knitwear.

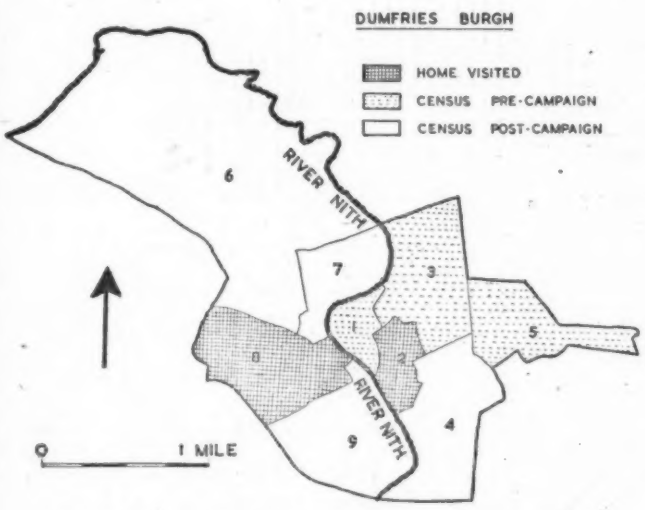

FIG. 1.—Nine municipal wards in the burgh divided into three sectors.

A mass radiography unit visited the large factories in 1951 and 1956, and also held two or three public sessions in the town in the latter year.

Plan of Experiment.—The town has nine municipal wards, which were divided into two groups of five and four wards approximately equal in population (Fig. 1). A private preliminary census was carried out in the group of five wards, of which two were intensively home-visited when *x*-raying began. The division of these five wards was planned to maintain a numerical and economic balance of the census population. Special attention was paid to the location of the wards, to the relative proportion of private and council houses, and to the amount of business property in each section. After the *x*-ray campaign was over a census of the group of four wards was carried out in the same way as that followed in the group of five wards before the campaign opened. Apart from the private census and home-visiting in the selected wards, the whole area was subjected to the same propaganda—for example, lectures, showing of a short film in the local cinema, distribution of leaflets and posters, newspaper announcements, loud-speaker van, etc. No prizes were offered.

There were therefore three distinct groups of population: *Sector A*—census, plus home-visiting, plus general propaganda (wards 2 and 8). *Sector B.*—census, plus general propaganda (wards 1, 3, and 5) *Sector C*—general propaganda (wards 4, 6, 7, and 9); the census in these wards was carried out when the campaign was over.

At no stage in the survey was it made known that the burgh wards were being treated differently. Our experience during the campaign confirmed that the public regarded the survey as a simple comprehensive effort to *x*-ray the entire population of the burgh aged 15 years and over.

General Methods.—Details of the general methods followed, from the beginning of the census in mid-February to the conclusion of the three-months *x*-raying early in July, are set out in an appendix (available from J. B. C.).

Results

Details of Response

The population of the burgh—that is, those aged 15 years and over residing at home during the private census—was found to be 20,269. Of these 14,136 were *x*-rayed, giving an overall response of 69.7% (Table I). The figures for three groups of population were: Sector A—population 4,679; 87.6% *x*-rayed; Sector B—population 5,176; 64.5% *x*-rayed; Sector C—population 10,414; 64.3% *x*-rayed.

The percentage age and sex distributions of the whole burgh and of the three sectors are shown in Fig 2. Sectors A and B had a similar distribution, but Sector C contained a younger population.

The influence of home-visiting and census-taking on *x*-ray response, analysed by age groups, is shown in Fig. 3. In all sectors there was the expected fall in response as age increased. The advantage of home-visiting was seen at all ages. Overall, a further 20% of the population attended the unit from the home-visited Sector A, and in the older age groups the improvement in response was about 30 to 40%. Although the overall response of Sectors B and C differed only by 0.2%, analysis by age groups showed a better response by Sector B at all ages over 35 years (Fig. 3). However, this difference is only statistically

*The survey was financed by a grant from the Royal Victoria Hospital Tuberculosis Trust, Edinburgh.

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significant for females aged 55 to 64 years. The overall similarity of response in Sectors B and C is explained by the younger population in Sector C (Fig. 2).

Previous Chest Radiography

Information was obtained from the whole *x*-rayed population regarding previous chest *x*-ray examination (Table II). In 40% of the males and more than 50% of the females the chest had not been previously *x*-rayed. Even in the age group 15 to 24 years 4 out of 10 persons were *x*-rayed by the unit for the first time. The chest x-ray examination of the general population during the preceding 18 months had largely been done by the M.M.R. in those of working age, with the exception of males under 30; among this group it was found that chest *x*-ray examinations in connexion with recruitment or discharge from H.M. Forces formed by far the greatest number.

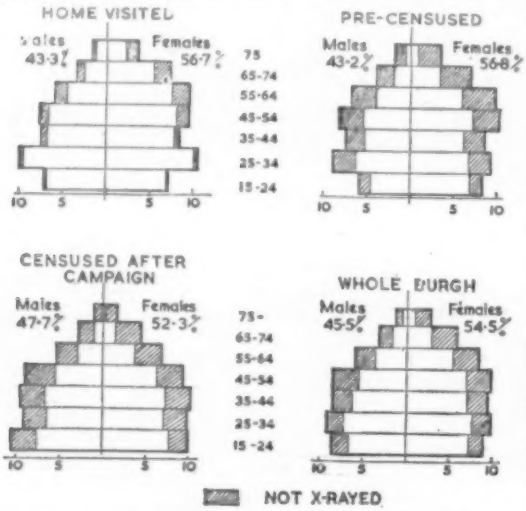

FIG. 2.—Percentage age-and-sex distribution of populations in whole burgh and in the three sectors.

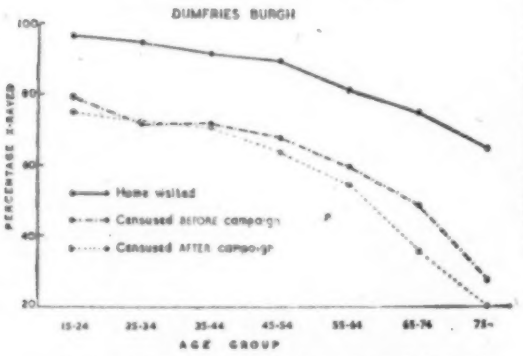

FIG. 3.—*X*-ray response in the three sectors of the burgh.

Other Data on Population Response

The population in Sector A, comprising 4,679 persons, which was intensively home-visited, was used to obtain further data on population response to mass radiography and reasons for not attending.

Response and Type of House.—An analysis of the percentage of persons *x*-rayed according to type of residence is shown in Fig. 4. The houses have been divided into three groups—council houses, villas, and all other houses. Overall, council-house tenants showed a slightly more favourable response than the tenants of other property (91.2% compared with 86.7% *x*-rayed). However, at ages 65 and over there was no difference in response between the council house and villa populations.

TABLE II.—*Previous Chest X-ray Examination in Relation to Sex and Broad Age Groups*

Previous Chest X-ray Examination	15 to 24		25 to 54		55 and Over		All Ages	
	M %	F %	M %	F %	M %	F %	M %	F %
None	42·4	40·6	34·0	50·9	55·0	74·2	39·6	54·4
Within 18 months	22·6	31·8	27·4	17·5	17·4	8·9	24·5	18·2
18 months to 3 years	12·2	8·4	8·8	8·0	7·3	3·5	9·2	7·0
More than 3 years	21·0	16·4	27·9	21·3	17·6	11·2	24·7	18·0
No information, doubtful ..	1·8	2·8	1·9	2·3	2·7	2·2	2·0	2·4
No. of persons	1,350	1,473	3,888	4,424	1,176	1,825	6,414	7,722

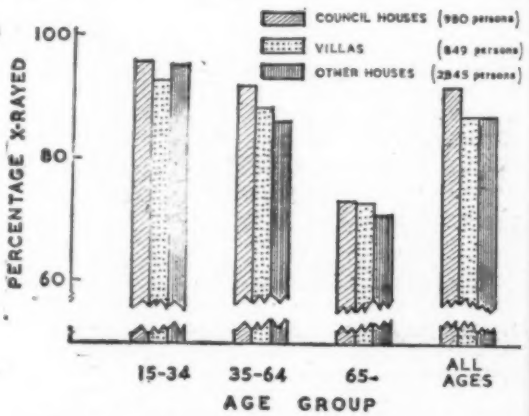

FIG. 4.—*X*-ray response according to type of residence.

TABLE I.—*Numbers in Each Age Group and Percentage X-rayed*

Age Group	Males						Females						Both Sexes		
	Sector A		Sector B		Sector C		Sector A		Sector B		Sector C		% *X*-rayed in Sector:		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	A	B	C
15–24	336	96·4	303	75·6	1,102	72·3	338	95·9	430	81·4	1,027	77·8	96·1	79·0	75·0
25–34	470	94·7	454	71·4	951	71·2	500	94·8	476	72·5	1,015	72·9	94·7	71·9	72·1
35–44	351	90·6	383	70·8	994	70·1	395	91·9	440	72·7	1,060	71·2	91·3	71·8	70·7
45–54	354	88·7	425	64·5	941	60·4	450	89·6	522	70·5	978	67·1	89·2	67·8	63·8
55–64	275	77·8	349	58·7	550	54·7	454	83·5	505	60·2	702	54·3	81·3	59·6	54·5
65–74	161	75·2	205	49·3	288	37·5	339	74·9	357	48·7	462	34·4	75·0	48·9	35·6
75+	79	77·2	92	40·2	114	21·9	173	58·4	180	21·7	180	18·3	64·3	27·9	19·7
Not stated	2		21		24		2		34		26				
All ages	2,028	88·7	2,232	64·6	4,964	63·9	2,651	86·8	2,944	64·5	5,450	64·6	87·6	64·5	64·3

Influence of the General Practitioner.—All the general practitioners in the town had been approached to help make the campaign a success, and in the home-visited wards the name of the practitioner was obtained from each person, whether *x*-rayed or not. An analysis of the response in the seven practices (Table III) showed no striking differences. For all

TABLE III.—*X-ray Response in Relation to General Practitioner (Sector A)*

Practice	Age 15 to 64		Age 65 and Over		All Patients
	% of Patients	% *X*-rayed	% of Patients	% *X*-rayed	% *X*-rayed
A ..	30·0	90·1	34·8	70·3	86·5
B ..	22·5	90·1	22·0	73·5	87·5
C ..	18·4	92·6	18·1	70·1	89·0
D ..	13·7	91·8	11·8	77·5	89·8
E ..	3·5	93·5	2·9	63·6	89·4
F ..	5·2	89·7	5·4	70·7	86·5
G ..	2·1	90·4	2·1	87·5	89·9
Others ..	4·6	87·3	2·9	35·7	83·8
Total ..	100·0	90·7	100·0	71·5	87·6

persons up to 64 years the lowest response from any practice was 89.7% and the highest 93.5%. At ages 65 years and over, in the practices with at least 50 of these patients, the variation in response was from 70·1 to 77.5%.

Reasons for Non-Attendance.—All those who were not *x*-rayed from Sector A of the burgh were visited by the medical director, who attempted to assess the reasons for non-attendance (Table IV). Approximately

TABLE IV.—*Reasons for Non-attendance Analysed in Broad Age Groups (Sector A)*

Reason	Age 15–64		Age 65 and Over		All Ages
	No.	%	No.	%	%
Physically unfit	15	4·1	41	19·1	9·7
Health reasons, although fit for *x*-ray	32	8·9	57	26·5	15·4
Recently *x*-rayed, but not within past 6 months ..	74	20·5	6	2·8	13·9
Not specified	240	66·5	111	51·6	61·0
	361	100·0	215	100·0	100·0

10% of those not *x*-rayed were physically unfit to come to the *x*-ray unit. A further 15% were assessed to have legitimate health reasons for non-attendance, although they were not, in fact, physically unfit to come. About 15% had had a recent chest *x*-ray examination, but not within the acceptable limit of six months from the start of the survey. The remaining 60% had no obvious reason for refusing. Over the age of 65 years the proportion of those physically unfit to attend was three times greater in women than in men.

TABLE V.—*Active Tuberculosis Discovered in Each Age Group of X-rayed Population*

	15–24	25–34	35–44	45–54	55–64	65–74	75+	All Ages*
Males:								
No. *x*-rayed ..	1,350	1,446	1,286	1,157	720	330	123	6,414
,, infective	1	1	1	5	1	—	—	9
Other active	—	—	1	1	—	—	—	2
Total ,, ..	1	1	2	6	1	—	—	11
(per 1,000)	(0·7)	(0·7)	(1·5)	(5·2)	(1·4)	—	—	(1·7)
Females:								
No. *x*-rayed ..	1,473	1,559	1,438	1,427	1,064	587	173	7,722
,, infective	1	2	1	—	2	—	—	6
Other active	2	2	—	—	—	—	—	4
Total ,, ..	3	4	1	—	2	—	—	10
(per 1,000)	(2·0)	(2·6)	(0·7)	—	(1·9)	—	—	(1·3)

* Including those whose age was not stated

Pulmonary Tuberculosis

Twenty-one cases of active tuberculosis (1.5 per thousand *x*-rayed) were discovered in the burgh, and 15 of them had tubercle bacilli in the sputum. The age/sex distribution of the active cases is shown in Table V and Fig. 5. Eight of the 10 female patients with active disease were under 45, while 7 of the 11 male patients with active disease were over 45.

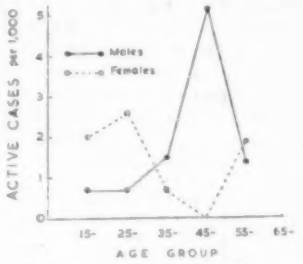

FIG 5.—Active tuberculosis per thousand *x*-rayed discovered in the burgh

An accurate measurement of prevalence of tuberculosis (cases discovered plus those already known) could only be made for Sector A. A comparison with Annandale (Cochran *et al.*, 1957) shows similar low rates for active and infective disease, but a higher rate for quiescent and arrested disease in Dumfries (Table VI).

In Table VII the rates for active tuberculosis are shown separately for the three sectors of the burgh population. The same rate (1.5 per thousand *x*-rayed) was found in Sector A (87.6% survey) as in the remainder of the burgh (64.4% survey).

TABLE VI.—*Comparison of Prevalence of Tuberculosis in the Burgh (Sector A) and in a Near-by Rural Area (Annandale)*

Pulmonary Tuberculosis	Dumfries Burgh (Sector A) (Pop. 4,098)		Annandale (Pop. 6,595)	
	No.	Per 1,000	No.	Per 1,000
Infective	5	1·2	6	0·9
Active (incl. infective) ..	9	2·2	12	1·8
Quiescent	24	5·9	25	3·8
Arrested	101	24·6	110	16·7

TABLE VII.—*X-ray Response in the Three Sectors of the Burgh in Relation to Yield of Active Tuberculosis*

Sector	% *X*-rayed	Active Cases Found	
		No.	Per 1,000 *X*-rayed
A	87·6	6	1·5
B	64·5 } 64·4	4 } 15	1·2 } 1·5
C	64·3	11	1·6

TABLE VIII.—*Age/Sex and Sector Distribution of Cases of Active Pulmonary Tuberculosis Discovered in Burgh in Year After End of Survey*

Sector		15–24	25–34	35–44	45–54	55–64	65–74	75+	All Ages
A	M	—	—	—	—	—	—	—	—
	F	—	—	—	—	—	—	—	—
B	M	—	—	—	2	—	1	1	4
	F	1	—	—	—	—	—	—	1
C	M	—	2	—	1	—	—	1	4
	F	—	—	1	—	—	2	—	3

In the year after the completion of the survey (August, 1957, to July, 1958) 12 additional cases of active pulmonary tuberculosis were notified in the burgh. Nine of these patients were not *x*-rayed during the survey. The age/sex and sector distributions of the 12 patients are shown in Table VIII. Five of the patients were over 65 years of age, and none was from Sector A.

Discussion

Mass miniature radiography has greatly developed in this country during the past 10 years. It has become established as an important method of case-finding and as a powerful weapon in the eradication of pulmonary tuberculous infection. There is, however, no general policy in its use, and, mainly owing to shortage of the expensive equipment required, the service has been largely confined to industrial areas and large burghs, concentrating on organized groups of the working population. The community survey, in which a total population is accurately defined by census and actively encouraged to be *x*-rayed, has been developed for purposes of epidemiological research by Cochrane *et al.* (1952, 1955, 1956) in South Wales. The Welsh principles and techniques have been successfully applied to a rural area in South Scotland (Cochran *et al.*, 1957). The community survey is a time-consuming and expensive undertaking in which the size of the object must be related to the resources available. Probably it can be justified only as a research method to study the various factors involved in population response to mass radiography and to give accurate epidemiological data on tuberculosis and other diseases.

A complete community survey of Dumfries burgh was outside the resources of the unit, and therefore the survey was designed as a controlled experiment on various aspects of population response, as has been described. While the work was being planned an all-Scotland mass radiography campaign was devised by the Department of Health, beginning in the spring of 1957 with the mammoth and highly successful community survey of the City of Glasgow. An extensive publicity campaign, including the attraction of substantial prizes, door-to-door canvassing by 15,000 voluntary workers and the use of 37 *x*-ray units from all parts of the British Isles (J. E. Geddes, 1957, personal communication) all combined to give a 76% survey on a scale which could not become a routine procedure. This has been followed by similar surveys in other large Scottish cities. The publicity associated with this Scottish campaign had without doubt a beneficial effect on the response in Dumfries, but, as has been stated, this survey was conducted for research purposes rather than as a method of case-finding.

It has been shown that persistent home-visiting will increase the response to mass radiography by about 20% up to the middle-age groups, and thereafter by about 30 to 40%. There is suggestive evidence that the personal contact of a prelimin ry census also has a beneficial effect on the response of the elderly. The amount by which door-to-door canvassing will increase the percentage *x*-rayed depends, of course, on the extent of the other publicity methods used. Our experience is that a good survey response can be obtained by intensive home-visiting with little or no additional publicity. On the other hand, there seems no doubt that large urban surveys with their emphasis on case-finding receive a great fillip from extensive publicity campaigns with large prizes. It is not known, however, to what degree publicity can raise the response, but we believe that without door-to-door canvassing by enthusiastic workers a survey is unlikely to exceed the 60 to 70% level. It must be emphasized that large errors can occur in assessing the response unless the population "at risk" is accurately defined and care taken to exclude from the analysis the inevitable large numbers of persons *x*-rayed from outside the surveyed area. For example, in Dumfries, where great emphasis was placed on accurate definition of the burgh population, one in five of all persons *x*-rayed was from outside the burgh.

A special study was made of the lapses in the home-visited wards to try to determine the reason why people will not attend for *x*-ray examination despite considerable pressure and the provision of ample opportunity. When the sick and infirm and those who have had a recent chest *x*-ray examination done elsewhere are excluded, it is found that about 60% of those who lapsed can advance no obvious reason for declining. Although based only on a rapid subjective assessment, we have no doubt that fear of disease (tuberculosis, lung cancer) and its socio-economic consequences is the predominant factor in non-attendance.

A National Health Service M.M.R. unit had visited the town on two occasions prior to the survey, in 1951 and 1956. These visits were largely concentrated on the large factories, with only a few public sessions in the town. It is surprising to find that of the population *x*-rayed in the present survey 39.6% of males and 54.4% of females had never before had a chest *x*-ray examination. It is disconcerting to find that about 40% of the young adult population (15–24 years) had had no prior chest *x*-ray examination. These figures show the need for more mass radiography facilities in the smaller towns. Analysis of the method of previous chest *x*-ray examination shows that National Service chest radiography accounts for the bulk of previous *x*-ray examinations in young adult males. With the reduction in National Service recruitment, the *x*-raying of young men may well decline unless other mass radiography facilities are made available.

The impression gained by the home-visitors that the occupants of villas were more reluctant to attend for *x*-ray examination than council-house tenants held good only up to the age of 65 years, and was only a 3% advantage. After 65 years the difference in response was negligible.

Experience in the Annandale Survey had emphasized the great value of the enthusiastic general practitioner in encouraging persons on his list to co-operate. An analysis of the response in the home-visited sector of Dumfries showed a close uniformity of attendance in the various practices, and no conclusions can be drawn. The intensive home-visiting done by the medical director in this sector may have eliminated a possible general-practitioner factor in influencing the response.

The low rate of active tuberculosis discovered in the town (1.5 per thousand *x*-rayed) was the same as that found in the rural survey in Annandale in the preceding year. The age/sex distribution of these active cases was similar to the pattern found in other surveys and in day-to-day clinical experience. The disease is predominantly attacking women aged 20 to 40 and men aged 40 to 60.

A comparison of prevalence rates in the home-visited sector of Dumfries and in Annandale showed that there was little difference in infective and active disease between the town and the rural area. The higher attack rate in the past among town dwellers is reflected in their greater incidence of quiescent and arrested lesions.

It has been claimed that the yield (rate per thousand *x*-rayed) for active disease increases as the percentage

-rayed rises (Bradbury, 1948). This did not occur in Dumfries. The same rate (1.5 per thousand *x*-rayed) was found in the home-visited sector (87.6% survey) as in the remainder of the town (64.4% survey).

We attach considerable importance to the follow-up study of the burgh with respect to pulmonary tuberculosis arising in the year following the survey. There were 12 new notifications. Three of these patients had been *x*-rayed in the survey; on re-reading the films only one of the three was regarded as having been "missed." The remaining two patients, aged 51 and 72 years, were, we believe, correctly passed as free from tuberculosis and yet within the year had developed active and infective lesions. This has occurred in a relatively small survey, and stresses the danger in clinical practice of excluding the possibility of active tuberculosis because of a recent clear M.M.R. film, even in a person over 50 years of age.

Among the 12 new notifications in the year after the survey there were nine patients who were not *x*-rayed during the campaign. None of these patients was from the home-visited sector of the burgh, where the survey reached the 86% level; this shows the value of a high *x*-ray coverage. Five of the nine patients were over 45 years of age, whereas in the survey no active disease was found above that age. *X*-ray response falls as age increases, and special efforts are necessary to get the co-operation of the elderly. It does appear from the survey that the residue of tuberculous infection is occurring in the areas and at the ages where the response was least satisfactory.

Summary

A controlled experiment in mass radiography has been carried out in a Scottish burgh (population 26,600). By dividing the town into three sectors and applying different techniques, the influence of home-visiting and census-taking on population response has been measured. Home-visiting increased the response by 20% up to the middle-age groups, and thereafter by about 30 to 40%. There was evidence that the personal contact of a census also increased the response of the elderly.

Other factors which might influence *x*-ray response have been examined.

A special study of those not *x*-rayed indicated that fear of disease was the predominant factor in non-attendance.

Measurement of the amount of previous chest radiography in the burgh showed the need for more facilities for mass radiography.

The low rate of active tuberculosis discovered in the town (1.5 per thousand *x*-rayed) and its age and sex pattern were similar to that found the previous year in a near-by rural area.

A follow-up study of active tuberculosis arising in the year after the survey has shown the value of high *x*-ray coverage and the danger in clinical practice of excluding tuberculosis because of a recent clear mass radiography film.

Many people are involved in a survey of this type, and it would be difficult to mention them all individually. We are indebted to the Provost and civic officials of the burgh, particularly the medical officer of health, Dr. E. Mills, for the many facilities placed at our disposal. The Western Regional Hospital Board again generously arranged for the secondment of one of us (J. B. C.); Mr. J. Brownlee and Mr. J. Wallace, of the local hospital board, relieved the unit of all accountancy work, and Dr J. G. McWhirter, consultant radiologist to the board, kindly arranged for his staff and department to be available for re-calls for large films.

All the voluntary organizations co-operated in publicizing the campaign; the local Round Table also provided transport, whilst the Girl Guides came to our aid in the distribution of several thousand leaflets. The publicity accorded to the survey by the local press was invaluable, whilst the help given us by the local cinema in the preparation and subsequent showing of a short film is gratefully acknowledged.

The staff of the survey unit spared no efforts to make the scheme successful, and maintained their enthusiasm throughout; particularly would we place on record the work of Miss B. Kearney and Miss E. Bell, the two members of the team who had taken part in the previous survey, for their untiring work under all conditions; we also thank the Oxford Regional Hospital Board for help in mechanical tabulation of records.

Finally, we thank the Royal Victoria Hospital Tuberculosis Trust, who so generously provided the funds to enable the survey to be carried out.

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PUERPERAL CARDIOMYOPATHY

BY

S. M. ROSEN, M.B., Ch.B.

Registrar, Medical Professorial Unit, St. James's Hospital, Leeds

Congestive heart failure associated with idiopathic myocardial degeneration in the last trimester of pregnancy and in the puerperium was first mentioned by Virchow in 1870, but was not recorded in detail until 1937, when Gouley *et al.* published reports of fatal and surviving patients. To date, 102 cases have been reported from the United States and Canada, but only three are recorded in British literature (Brigden, 1957). No mention of this disease is made in such standard textbooks as those of White (1951), Paul Wood (1956), Friedberg (1956), or Levine (1958). It is hoped that this communication will encourage recognition of further cases, and that detailed study of these cases might reveal the aetiological factors concerned in the production of the myocardial degeneration.

Case History

A housewife aged 35 was admitted to hospital on October 12, 1957, in the 32nd week of a twin pregnancy, complaining of dyspnoea. She had had two previous normal deliveries in 1946 and 1950 after uncomplicated pregnancies. No past medical history was of importance. Clinical examination showed no evidence of oedema, the pulse rate varied between 80 and 100 a minute, the blood pressure was 120/80, while urine analysis showed no albuminuria. After one week's bed rest she was discharged home, and remained well for the next two weeks, when palpitations and ankle-swelling were noticed and the return of dyspnoea necessitated her readmission on November 26. Examination on

this occasion revealed a tachycardia of 150 a minute, a pulse of small volume, B.P. 180/120, and ankle and sacral oedema. Examination of the heart, abdomen, C.N.S., and ocular fundi revealed no abnormalities, and the jugular venous pressure was not raised. There was no source of embolus from the lower limbs. The urine contained albumin (28 g. per litre), numerous hyaline and granular casts, and scanty cellular casts. This finding indicated a pre-eclamptic toxaemia, and urgent surgical induction was performed, with an almost immediate onset of labour which lasted two hours, resulting in the normal delivery of twins weighing 3 lb. 12 oz. and 5 lb. 1 oz. (1,700 and 2,295 g.) respectively. There was no post-partum haemorrhage, and a macroscopically normal placenta was delivered within 30 minutes.

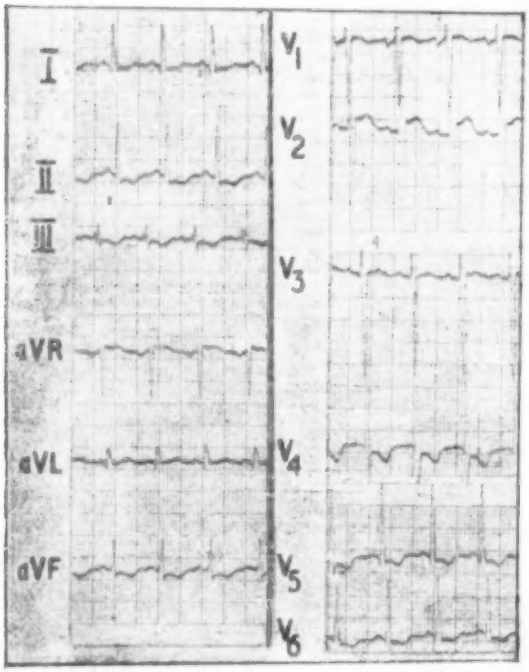

FIG. 1.—E.C.G. two days after delivery (rate 150 a minute), showing no variation with vagal stimulation. P-R interval 0.08 second, but P complexes are normal in shape. Pathological inversion of the T waves has occurred in the left ventricular surface leads.

Three hours after delivery the pulse rate remained at 150 and the respiratory rate was 40 a minute. Auricular paroxysmal tachycardia was suspected and an E.C.G. revealed normal complexes. The P–R interval, however, was only 0.08 of a second, and the rate could not be varied by carotid sinus or eyeball compression. Although cardiographic distinction between a sinus and paroxysmal tachycardia was difficult, rapid digitalization was thought desirable. Forty-eight hours later the blood pressure had dropped to 140/90 and there was a marked reduction in albuminuria, but her rapid heart action persisted (Fig. 1) and her general condition still gave grounds for grave anxiety. Methacholine, 20 mg. intramuscularly, did not influence her heart rate. Eight days after delivery her temperature rose to 100° F. (37.8° C.) and was thought to be due to either a pelvic or a respiratory infection. Gynaecological examination revealed no abnormality and the temperature quickly subsided on treatment with penicillin. This temperature, however, was immediately followed by alarming attacks of paroxysmal dyspnoea accompanied by sweats and oppressive substernal and left mammary discomfort which continued for the next 11 days. A radiograph of the chest (Fig. 2) was reported on as follows: "Heart considerably enlarged, and its configuration would suggest a pericardial effusion. There a congestive changes in the lungs. Increased opacity at th right lower zone may be early consolidation, but most appeared to be due to congestion."

On the 10th day after delivery continued uncontrollab tachycardia made it necessary to try the effect of quinidin Daily doses of 3.6 g. were given for three successive days, again with no slowing of the heart rate. It was noted, however, that, despite the large doses employed, at the end of three days the blood quinidine was only 0.5 mg. per litre, an adequate therapeutic level being 4 to 10 mg. per litre (Sokolow, 1951). Similarly, procainamide, 600 mg. intravenously, caused no diminution in the heart rate. Two weeks after delivery an apical systolic murmur, a presystolic gallop rhythm, and a loud second sound in the pulmonary area were first noticed, and heralded th onset of congestive heart failure, which was treated b digoxin and mersalyl. Three days later (December 1 quinidine in large doses (4.8 g. a day) was given on thre successive days, and again produced a subtherapeutic bloo level of 2 mg. per litre and had no effect on the rapid hea rate.

FIG. 2.—Radiograph of chest eigh days after delivery showing general ized cardiac enlargement. The cardia outline has a stencilled appearance.

Three weeks after delivery (December 19) the tachycardi slowly began to decrease; at this time inverted T waves i all the chest leads were first recorded electrocardiograp ically, and these increased progressively in subsequent week (Fig. 3).

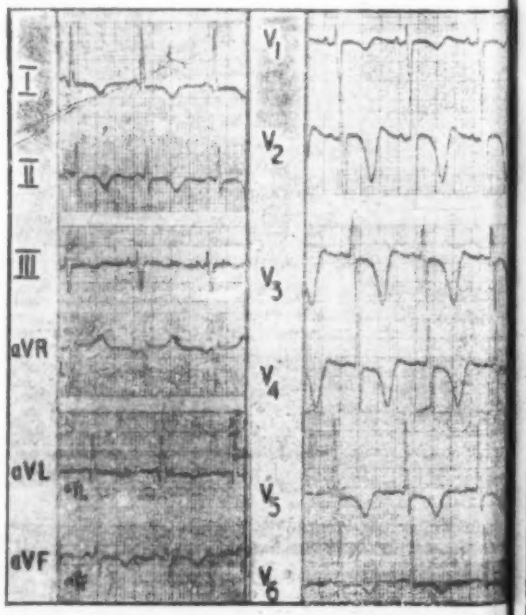

FIG. 3.—E.C.G. six weeks after delivery, showing inverted waves, indicative of diffuse myocardial damage, in the standa leads (I–III), unipolar limb leads (aVR, aVL, aVF), and precord leads (V_1–V_6).

Subsequent treatment was then limited to the improvement of the congestive heart failure with digoxin, mersalyl, and a low-salt diet. On this regime the patient's condition gradually improved, the triple rhythm disappeared, the second sound in the pulmonary area became softer, and the heart rate slowed. The clinical improvement was maintained until 6½ weeks after delivery (January 10, 1958), when she suddenly became very dyspnoeic, coughed up a small amount of blood-stained sputum, and complained of a gripping substernal pain and oppressive left mammary distress, nausea, and sweating. She became pale and shocked, with a pulse rate of 140, although her blood pressure was maintained at 135/105. A few hours later a presystolic triple rhythm recurred and the second sound in the pulmonary area became louder and more widely split. It seemed likely that a pulmonary embolus had occurred, although there was no obvious source of emboli from the lower limbs. *X*-ray examination of the chest showed an opacity at the right base indicative of infarction or consolidation, while the cardiac shadow still suggested a possible pericardial exudate. An E.C.G. revealed the T waves less obviously inverted than formerly. In view of this embolic complication anticoagulant therapy was thought desirable.

However, even though large doses of phenindione, 500 mg. daily, and ethyl biscoumacetate, 600 mg. daily, were given for four days the one-stage prothrombin time could not be decreased to less than 85% of normal. Several batches of tablets were tried and the drugs administered under supervision. The patient's condition, however, again gradually improved, her pain and dyspnoea lessening. Despite this clinical improvement her cardiograph demonstrated increasing T-wave inversion. It was extremely difficult to decide when the patient should be mobilized, but in view of the reduction of heart size and the disappearance of the congestive heart failure this was begun 10 weeks after delivery (February 10), and she was finally discharged in the 14th post-partum week (March 10).

Twenty weeks after delivery she reported that she was able to look after her house and four young children without help. Her resting pulse rate was 80 a minute and of normal volume, there was no apical triple rhythm, and the second sound in the pulmonary area had decreased in intensity and had become less widely split. There were no signs of congestive heart failure. The E.C.G. had not yet returned to normal, but it showed much improvement, the T waves now being upright in leads I, aVL, V_{4-6} (Fig. 4). Screening of the chest also showed an improvement in that the heart became less globular and the transverse diameter had decreased in size (Fig. 5).

Investigations.—Anaemia was not a feature of the case, the haemoglobin in October, 1957, being 81%. Because there was a possibility that a salt-losing renal lesion might have induced hypokalaemia accompanied by tachycardia, serial estimations of serum sodium, potassium, and chloride were undertaken and were all within normal limits. The blood urea was never significantly raised, being 54 mg. per 100 ml. immediately after delivery and dropping to 43 mg. in the first post-partum week. The B.S.R. was never elevated, and a raised W.B.C. and temperature were present only when the diagnosis of pulmonary embolus was made. Blood cholesterol six weeks after delivery was 181 mg. per 100 ml., serum albumin 4.5 g./100 ml., globulin 2.6 g./100 ml., and no L.E. cells were found on repeated examination of the blood. Because of her extreme resistance to many forms of oral drug therapy, a malabsorption defect was suspected. This was investigated by a fat balance two months after delivery; this showed an absorption of only 80%, but a week later the absorption was 94%.

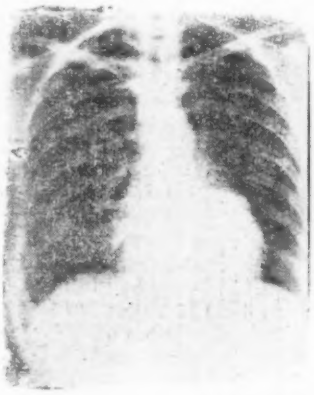

FIG. 5.—Radiograph of chest 20 weeks after delivery, showing that the heart size and contour have returned to normal.

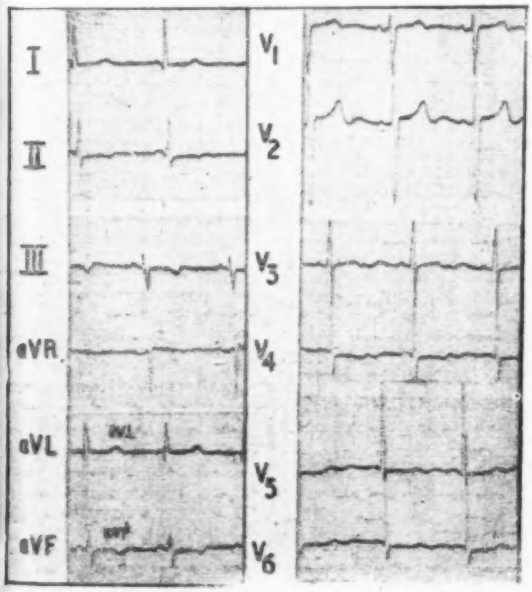

FIG. 4.—E.C.G. 20 weeks after delivery, still showing pathological changes but a return towards normality is occurring.

Discussion

Reports of cases with strikingly similar histories and clinical courses have been made under such titles as "idiopathic myocardial degeneration associated with pregnancy and especially the puerperium" (Gouley *et al.*, 1937), "toxic post-partal heart disease" (Hull and Hafkesbring, 1937), "post-partal heart disease" (Melvin, 1947), "post-partum myocardosis" (Woolford, 1952), and "myocardial failure in last trimester of pregnancy and the puerperium" (Meadows, 1957). No satisfactory figures are available for the incidence of this disease, but Woolford (1952) found an incidence of 1 in 4,000 admissions to Cincinnati General Hospital. Meadows (1957) observed six patients who died from this syndrome between 1945 and 1950 in a hospital which had 7,519 deliveries in 1949. Women over 30 years of age are more often affected than those under this age. The highest incidence of the disease occurred in primigravidae in Hull and Hafkesbring's series, but in Meadows's series it was highest during the patient's third pregnancy. Twin pregnancies are more often affected than single pregnancies (Hull and Hafkesbring 1937; Musser *et al.*, 1938; Woolford, 1952; Meadows 1957).

The clinical syndrome reported by Gouley *et al* (1937) consists of dyspnoea, congestive heart failure, cyanosis, sinus tachycardia, triple rhythm, and emboli from both sides of the heart. Meadows (1957) made clinical observations on 15 patients and noted triple

rhythm and sinus tachycardia in all, a precordial systolic murmur in 8, an accentuated second sound in the pulmonary area in 12, congestive heart failure in 8, and profuse sweating in 2. Three patients presented with emboli (cerebral, pulmonary, and probably renal) before cardiographic changes had taken place, thus causing difficulty in diagnosis; these features had been noted in this and other case reports. Chest pain was not noted by Hull and Hafkesbring or by Gouley *et al.*, but Woolford and Meadows noted recurrent precordial distress in eight patients and substernal oppression in five. In the case recorded above gripping substernal pain and left mammary distress were noted during the time nocturnal dyspnoea was present and when the second pulmonary embolus occurred. The association of the onset of the disease with acute hypertension, which quickly settled with the development of congestive heart failure, was commented on by Hull and Hafkesbring (1937), Musser *et al.* (1938), Sodeman (1940), and Meadows (1957), and was a striking feature in the present case.

Abnormal E.C.G. changes (low or inverted T waves) have been noted by all authors. Meadows (1957) stated that 4 out of 10 patients showed some abnormality at the time of the last tracing, 9–19 months later. Brigden (1957) reported persisting abnormalities in all three of his cases. T-wave changes were particularly pronounced in the above case, and six months after delivery, although showing considerable improvement, they had not returned to normal. *X*-ray appearances of the heart in other reports show generalized enlargement which gradually decreased as cardiac compensation improved (Meadows, 1957; Brigden, 1957).

In the present case a considerable degree of cardiac enlargement was first reported by the radiologist as showing pericardial effusion; however, this type of stencilled appearance is typical of cardiomyopathy and is due to deficient pulsation of the cardiac chambers, a change that favours the formation of mural thrombus, which was the source of recurrent pulmonary emboli. After a variable period of time and with few exceptions cardiac compensation improves. Embolism is the major factor complicating the disease and is the main cause of death, and for this reason intensive anticoagulant therapy seemed desirable. Bashour and Winchell (1954) obtained therapeutic levels of phenindione in two cases, but we were unsuccessful in lowering the prothrombin time to therapeutic levels with large doses of potent phenindione and ethyl biscoumacetate.

Of the 15 patients reported by Meadows (1957) 10 had one or more subsequent full-term pregnancies, complicated in six instances by exacerbations resembling the initial episode. In two cases two pregnancies with cardiac involvement alternated with another free from such complications. Further remissions had occurred in half of the cases having an exacerbation in a subsequent pregnancy, but patients whose hearts remained enlarged after the initial episode eventually died in congestive failure as a result of the exacerbation of the disease in a subsequent pregnancy. Hull and Hafkesbring (1937) also noted the recurrence of cardiac failure in subsequent pregnancies in 4 out of 27 cases. In one of these cases cardiac involvement followed non-consecutive pregnancies. It seems, therefore, that exacerbation in subsequent pregnancy is possible, though no accurate estimate of its frequency is yet possible on the data available.

Pathology

Since 1937 15 necropsies have been reported and all save one case had a soft flabby heart containing ventricular mural thrombi, embolization of which caused death in three of the cases of Gouley *et al.*, involving mesenteric, cerebral, and pulmonary vessels. Histologically the lesions were degenerative rather than inflammatory, the myocardium showing foci of disintegrating myocardial fibres, haemorrhage into which was a common finding. A moderate number of lymphocytes and macrophages, and occasional neutrophils and eosinophils, were present, which, as the lesions became older, were replaced by fibroblasts. The arteries were found to be patulous throughout, while the arterioles showed no thickening in the early destructive lesions.

Aetiology

No evidence of collagen, pituitary, or thyrotoxic disorder has been previously reported, and was not present in our case. An endocrine disorder specific to pregnancy seems also to be contraindicated as a unique cause of cardiomyopathy, as Gouley *et al.* (1937) report two cases occurring in males and showing similar pathological pictures. However, the recurrence of the disease after non-consecutive pregnancies and its higher incidence after twin pregnancies are indicative of a specific association with some derangement during or after pregnancy. Acute hypertension preceding the heart disease is a common feature in reported cases, but although it may be a contributing factor it is not the cause of the disease, since several cases did not have any rise in blood pressure and the pathological picture is not similar to that of patients dying from essential or malignant hypertension (E. A. Gail, quoted by Woolford, 1952).

The possibility of a nephritic cause has been considered by other authors (Gouley *et al.*, 1937; Musser *et al.*, 1938; Sodeman, 1940; Melvin, 1947), but it is generally felt that nephritis can definitely be separated from this condition. Toxaemia of pregnancy does not appear to be a significant factor in other series, and in our case there were no signs of toxaemia after the first post-partum week. Szekely and Snaith (1947), in their observations of the effect of toxaemia on the myocardium, noted the E.C.G. changes to be transient, in some cases resembling the pattern of an anterior myocardial infarct. They noted no change in the radiological appearance of the heart. A nutritional deficiency possibly accounts for the higher incidence of cases reported from the Southern States of the U.S.A., but none of the cases responded to vitamin B, and our case was treated empirically with vitamin B early in the disease with no improvement.

Cor pulmonale due to unheralded pulmonary embolus has to be considered as a cause of the myocardial disease, since pulmonary emboli and an accentuated second sound in the pulmonary area occurred in our case and a number of others. However, the E.C.G. pattern in the present case has never resembled the changes due to a pulmonary embolus, although E.C.G. recordings were sometimes made diurnally in the early stages of the disease. The fact that T-wave changes occurred first over the left ventricular leads and only later spread over the right ventricle also tends to refute this possibility.

Atherosclerotic coronary arterial disease also seemed a most unlikely cause of the myocardial disease in our

patient. There had been no history suggestive of coronary insufficiency before or since recovery from the illness, the blood cholesterol was within normal limits, and no Q waves were demonstrated although widespread injury was indicated cardiographically. Eight months after delivery (July, 1958) no change could be detected in the E.C.G. before and after exercise (stepping test at the rate of 30 steps a minute for two minutes).

Bashour and Winchell (1954) reported two cases of myocardial degeneration in pregnancy and the puerperium which fit into the clinical pattern of the picture previously described. They discovered a factor in each case which could account for the degeneration, sensitivity to sulphonamide therapy, and an epidemic respiratory infection respectively; and postulated that if each case history was analysed in sufficient detail a cause for the degeneration would be found.

A feature of this patient was the difficulty in obtaining therapeutic levels in most drugs used in her treatment. It was found impossible to lower the prothrombin time to therapeutic levels by phenindione and ethyl biscoumacetate; large doses of quinidine (4.7 g. a day) produced a blood level of only 2 mg. per litre, and 1.5 mg. of digoxin daily was required to maintain her digitalization. An intestinal cause was unsuccessfully sought to explain these factors; the stools had never been loose, bulky, or offensive, the patient was well nourished, and fat-balance studies showed normal absorption. The glucose-tolerance curve and the serum alkaline phosphatase were normal. The possibility that excessive tissue metabolism of these drugs might have occurred was considered but not investigated.

Summary

A case of myocardial degeneration occurring in late pregnancy and the puerperium is reported because of its rarity and its conformity to other reported cases. A satisfactory clinical recovery occurred.

The syndrome consists of congestive heart failure occurring in the last trimester of pregnancy and the puerperium with no previous history of cadiovascular disease. It is associated with sinus tachycardia, small pulse volume, triple rhythm, precordial systolic murmur, a loud second sound in the pulmonary area, profuse sweating, emboli, and cardiographic evidences of myocardial disease.

No satisfactory cause for the degeneration has been discovered.

I thank Professor R. E. Tunbridge and Dr. G. Watkinson for their advice on the manuscript and permission to publish the case history.

ADDENDUM.—Since this paper was submitted Benchimol *et al.* (1949) have published a series of 18 cases of post-partum heart failure occurring in the absence of pre-existent cardiac disease. In this series they state that they recognize five main groups classified according to aetiological factors: (1) cases undoubtedly due to toxaemia of pregnancy (8 cases); (2) cases probably related to toxaemia of pregnancy (3 cases); (3) cases related to non-specific myocarditis which may be seen associated with several types of infection; (4) cases with pre-existent hypertensive disease (chronic pyelonephritis, etc.); and (5) cases corresponding to specific myocarditis (Chagas's disease and miliary tuberculosis).

The cases reported in group 2 conform very closely in clinical, E.C.G., and radiological descriptions to those of the above case report.

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ACUTE BACILLARY DYSENTERY IN CYPRUS

A COMPARATIVE STUDY OF TREATMENT IN 332 CASES

BY

P. J. TAYLOR, M.B., B.Sc., M.R.C.P.

Medical Registrar, St. Thomas's Hospital, London; Later, Squadron Leader, Royal Air Force

Bacillary dysentery has always been very common amongst British Forces in the Middle East. In the first world war its incidence and severity were extremely high, but in the second the disease was not so disastrous. However, it still produces more admissions to hospital than any other condition in these Forces. In the United Kingdom it is also of considerable importance, particularly in children. The annual notifications in England and Wales have risen from 2,860 in 1940 to 28,910 in 1957, with a peak of 49,009 in 1956.

Sulphonamides were introduced as the standard treatment of dysentery nearly twenty years ago, and were the subject of favourable reports by Fairley and Boyd (1943), Bulmer and Priest (1943), Hardy (1946), and Weil (1947). Controlled trials by Fairbrother (1944), Scadding (1944, 1945), Jamieson *et al.* (1944) and Brodie *et al.* (1946) suggested that these compounds were little better than supportive treatment, but they still remain the standard treatment for bacillary dysentery.

The Korean War provided the opportunity for a large-scale trial of broad-spectrum antibiotics by Garfinkel *et al.* (1953), and they were also used in a smaller trial in England by Abbott and Parry (1955). Although the tetracyclines proved the most successful, the hazards attending their use are generally thought to outweigh their advantages. Oral streptomycin was recommended by Ross *et al.* (1949) and by Sangster (1956). A combination of sulphonamide and streptomycin was recommended on laboratory evidence by Klein and Kimmelman (1946) and tried with success on infants by Johnson and Landsman (1957).

A trial of dysentery treatment was undertaken at the R.A.F. Hospital, Akrotiri, Cyprus. The object was to

compare and evaluate the merit of symptomatic non-specific treatment with recognized specific treatment, using antibacterial agents. The second object of the trial was to compare small-dose soluble sulphonamide treatment augmented by oral streptomycin with the large-dose insoluble sulphonamide treatment that has been popular in this country.

Material and Methods

A fairly mild variety of bacillary dysentery is seasonal in Cyprus between May and November. All male patients with acute bacillary dysentery admitted to the hospital in 1957 and 1958 were included in the trial so long as they had not already received chemotherapy. All were young Service men between the ages of 19 and 30. The length of history before admission varied from 12 to 48 hours: this is in contrast to the cases reported from the Middle East during the last war by Fairley and Boyd (1943) and Scadding (1944, 1945), when two to four days was the usual period.

Three daily consecutive stool specimens were examined by microscopy and culture on desoxycholate citrate agar. The diagnosis of acute bacillary dysentery in a case with acute diarrhoea was made on either or both of the following findings: (1) isolation of a shigella identified by slide agglutination and sugar cultures; and (2) microscopical discovery of a "bacillary exudate," consisting of an inflammatory exudate containing a large number of pus cells and red cells with fewer macrophages and epithelial cells. Isolation of a shigella resulted in the diagnosis of "proved bacillary dysentery," while the finding of a bacillary exudate resulted only in a diagnosis of "clinical bacillary dysentery." The latter diagnosis was used by Fairley and Boyd (1943) and by other writers.

The organisms isolated from all the cases are detailed in Table I. Shigellae were isolated from 146 cases—in 130 (89%) from the first specimen and 10 of the remainder from the second. With only two exceptions, whenever a shigella was isolated the stool had shown a bacillary exudate.

TABLE I.—*Dysentery Bacilli Isolated in 1957 and 1958*

Organism	Total No.	%
Flexner I	18	12·3
.. III	2	1·4
.. VI	52	35·6
Sonne	72	49·3
Boyd DI	2	1·4

Comparison of Treatment by Phthalylsulphathiazole with Non-Specific Treatment

The R.A.F. Institute of Pathology and Tropical Medicine recommends as routine treatment for bacillary dysentery a six-day course of 125 g. of phthalylsulphathiazole. This dosage is higher than that used in most dysentery treatment trials, but is in accordance with the recommendations of Fairley and Boyd (1943).

Alternate patients in 1957 were given either phthalylsulphathiazole in an initial dose of 9 g. followed by 4 g. five times daily for a total of six days, or "dummy" tablets labelled "K.110," inert except for homoeopathic doses of mixed vitamins, twice daily for six days. The identity of these tablets was not revealed to patients or nursing staff. In addition, mist. kaolin et morph. *B.P.* was given to both groups in the usual dosage as often as required. The seventh day after beg treatment was a rest day, and from the eighth to t thirteenth day the patient produced six daily clearan stools which were examined by the laboratory.

Results.—Clinical measurements were not made at th stage, but the impression gained was that the diarrho and colic of patients on the sulphonamide settled abo one day before those of the control group. The relaps rates are shown in Table II; the difference betwe

TABLE II.—*Preliminary Trial Relapse Rates*

Type of Dysentery	Sulphonamide Group			Control Group		
	Cases	Relapsed	%	Cases	Relapsed	%
Flexner I ..	2	0	0	4	0	0
.. III ..	1	0	0	1	0	0
.. VI ..	2	0	0	2	0	0
Sonne	24	1	4·2	26	7	26·9
Boyd DI ..	0	—	—	2	0	0
Total proved ..	29	1	3·3	35	7	20·0
Clinical dysentery	58	5	8·6	51	8	15·6
Total	87	6	6·9	86	15	17·4

them in the proved cases is statistically significa (D./S.E. = 2.01), as is that in the total dysentery grou (D./S.E. = 2.10). Those cases with proved dysente which relapsed did so coincident with the discovery the organism in a clearance stool, and those with clinic dysentery were found to have relapsed on the discover of a shigella or the reappearance of a bacillary exuda alone. The vast majority of relapsed cases did n have more diarrhoea.

Comparison of Soluble Sulphonamide and Streptomycin with Phthalylsulphathiazole

Alternate patients in 1958 were given eith phthalylsulphathiazole in the dosage detailed above, "streptotriad," a proprietary preparation containing each tablet 65 mg. of streptomycin, 100 mg. sulphathiazole, 100 mg. of sulphadiazine, and 65 mg. sulphamerazine. This was given as three tablets thri daily for six days, the whole course being 3.51 g. streptomycin and 14.31 g. of soluble sulphonamid The identity of these tablets was concealed behind th name "K.111." In addition, mist. kaolin et morph *B.P.* was given as required.

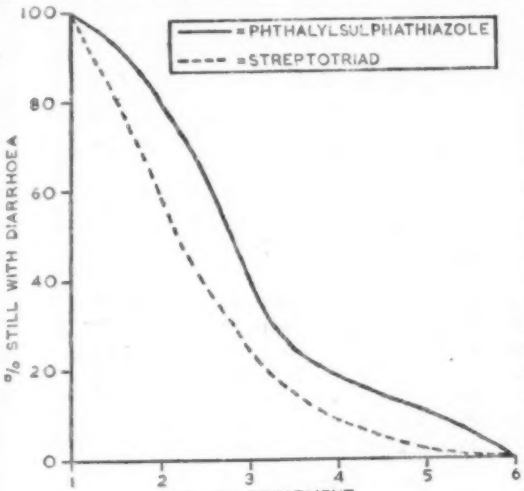
Follow-up.—The patients were seen daily by medical officer and the duration of diarrhoea was note After the six treatment days one rest day passed befor the six consecutive daily clearance stools we examined.

Results.—Since the time regime of treatment was th same, only two criteria of the effectiveness of th treatment have been chosen: the duration of diarrhoe from the beginning of treatment, and the clinical an bacteriological relapse rate during the six clearanc days. Measurement of the duration of fever o abdominal colic was found to be of little value sinc only some 55% of the patients had a fever, and thi settled in almost every case by the end of the secon day.

The duration of diarrhoea is shown in the Char expressed as a percentage of those still having more tha two loose stools daily on the various days of treatment In the sulphonamide-treated group the average duratio of diarrhoea of those with proved dysentery was 3.6 days, for those with clinical dysentery 3.43 days, an for the whole group 3.44 days. In the streptotria treated group the average duration in those wi

proved dysentery was 2.84 days, in those with clinical dysentery 3.02 days, and in the whole group 2.95 days. These figures have been analysed statistically with the following results:

All phthalylsulphathiazole cases: mean, 3.44 days. Standard deviation, 1.18. All streptotriad cases: mean, 2.95 days. Standard deviation, 1.03. Difference of the means: 0.49. Standard error of the difference of the means: 0.176.



Duration of diarrhoea.

The difference of the means is statistically significant, being considerably more than twice its standard error. The relapse rates are shown in Table III; the difference between them in the proved cases is not significant (D./S.E.=0.28), nor is that for the total dysentery cases (D./S.E.=0.26).

TABLE III.—*Main Trial Relapse Rates*

Type of Dysentery	Sulphonamide Group			Streptotriad Group		
	Cases	Relapsed	%	Cases	Relapsed	%
Flexner I ..	5	2	40·0	7	2	28·5
.. VI ..	28	2	7·1	20	1	5·0
Sonne	12	0	0	10	1	10·0
Total Proved ..	45	4	8·9	37	4	10·8
Clinical dysentery	35	3	8·6	42	2	4·8
Total	80	7	8·7	79	6	7·6

The figures for 1957 and 1958 have been combined to show the clearance day on which the cases relapsed (see Table IV). This clearly demonstrates the importance of examining several clearance specimens.

TABLE IV.—*Day of Relapse*

Clearance day ..	1	2	3	4	5	6
Number relapsed	10	5	6	7	1	3

Discussion

One of the difficulties in comparing treatments for dysentery is that reported epidemics vary greatly, not only in the type of organism but also in severity. The pattern of dysentery in the Middle East has changed in recent years. Boyd (1946) reported the isolation of shigellae in 27,414 men of the Middle East Forces between 1940 and 1943; 19% *Sh. shigae*, 7% *Sh. schmitzii*, 62% *Sh. flexneri*, and only 7% *Sh. sonnei*. In the present small series of 146, however, there were neither *Sh. shigae* nor *Sh. schmitzii*; 49% were *Sh. flexneri*, and *Sh. sonnei* had risen to 49%. Thus comparison between the present series and those of Fairbrother (1944) and Scadding (1944, 1945) becomes difficult. On the other hand, the series from the United Kingdom refer almost exclusively to *Sh. sonnei*, and the great majority of cases described are in infants and small children.

A further point of considerable importance in comparing one trial with another, even when the same drug is used, is the total dosage and the duration of administration. Thus for the insoluble sulphonamides this has varied from 31 g. in five days (Brodie *et al.*, 1946) and 56 g. in seven days (Abbott and Parry, 1955) to 90 g. in six to nine days (Fairbrother, 1944); while the dose used in the present series was 125 g. in six days. This large dose is recommended in the R.A.F. because of the unsatisfactory response to smaller dosages (W. P. Stamm, 1958, personal communication).

Finally, any test of cure must involve an adequate clearance check. Fairbrother stated: "It is obvious that the criterion of freedom from infection at present generally accepted—that is, three successive negative results—is quite unreliable." He therefore recommended that 12 daily specimens should be obtained, beginning six days after cessation of treatment. This, however, is impracticable, since it involves some four weeks' isolation. The method adopted here—six successive days, beginning two days after the cessation of treatment—is longer than in many of the reported trials.

The results recorded in this paper show that one week's symptomatic treatment alone allowed one in five of proved bacillary cases to flourish as intestinal carriers, whereas a full course of phthalylsulphathiazole produced bacteriological cure in 93.1% of cases as well as quicker symptomatic recovery. The difference between relapse rates with streptotriad and phthalylsulphathiazole was not significant, although with streptotriad the duration of diarrhoea was significantly shorter by half a day. In addition to this advantage, streptotriad is much more acceptable to the patients, since no large initial dose is required and the six-day course consisted of only 54 tablets, while phthalylsulphathiazole began with 18 tablets and a total of 250 tablets in six days. This is important when one considers that in many cases of acute bacillary dysentery nausea is a leading symptom. Finally, at these dosages, a course of streptotriad at current retail prices is 11s. 9d. cheaper. No side-effects were noted in the group on streptotriad, but one patient on phthalylsulphathiazole developed a transient macular rash.

Summary

A trial of treatment for acute bacillary dysentery is described.

A full course of phthalylsulphathiazole was shown to be significantly more effective, both clinically and bacteriologically, than supportive treatment alone.

A mixture of soluble sulphonamide and streptomycin in moderate dosage gave better clinical results than the full course of phthalylsulphathiazole, and is both cheaper and more acceptable to the patient.

The changing pattern of bacillary dysentery, the need for a standard dosage of sulphonamides, and the importance of adequate tests of cure are discussed.

I thank the Director-General of the Royal Air Force Medical Services for permission to publish; the sisters and medical officers at various times in charge of the dysentery ward for their co-operation, without which this work could not have been done; and the pathologists for the stool examinations. I also thank May & Baker Limited for generously supplying the streptotriad.

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SULPHONAMIDES AND STREPTOMYCIN IN BACILLARY DYSENTERY

A CONTROLLED TRIAL

BY

J. FALIŠEVAC, M.D.

Z. KOŠUTIĆ, M.D.

Hospital for Infectious Diseases, Zagreb

AND

M. GALINOVIC-WEISGLASS, M.D.

Bacteriological Laboratory of the Institute of Hygiene, Zagreb

Bacillary dysentery is very prevalent in many warm climates, and in recent years its incidence has greatly increased in temperate climates, especially during the winter and spring. Before the introduction of sulphonamides the course of the illness was not infrequently prolonged, disabling, and sometimes fatal. The use of the poorly absorbed sulphonamides in the early years of the second world war revolutionized treatment, and later the absorbable sulphonamides in smaller dosage were found to be equally effective, although special care must be taken with them, especially in the tropics, to keep the patient free from renal blockage by adequate hydration. The combination of three sulphonamides used in this trial has generally been found to be remarkably free from this defect. In recent years, however, sulphonamide-resistant strains, especially of *Shigella sonnei*, have been met with increasingly, and streptomycin given orally has been widely reported as a satisfactory though expensive substitute, but, again, some strains have become resistant to streptomycin. In some hospitals, therefore, the newer broad-spectrum antibiotics have been employed in moderate or low dosage. Marked success in the control of the dysenteric symptoms has been claimed with these, but there is a risk of side-effects, some very serious. In any case, the high cost of these drugs makes their massive use out of the question in most tropical and semi-tropical countries.

In order to explore the factors of efficiency combined with cheapness in the mass treatment of bacillary dysentery, a small controlled trial was carried out in Zagreb with (*a*) sulphonamides alone, (*b*) tablets containing about 80% sulphonamides and 20% streptomycin, and (*c*) streptomycin alone. Patients with the acute dysenteric syndrome (abdominal pain, tenesmus, and acute diarrhoea with blood and mucus in the stools), who had had no specific treatment before admission to the hospital, were given the following treatment in successive groups, the dosage being suitably modified in children.

Group 1.—0.5-g. tablets of "sulphatriad" in dosage for adults of 1 g. six-hourly for seven days (total 28 g.). (0.5 g. sulphatriad = 0.185 g. sulphathiazole + 0.185 g. sulphadiazine + 0.130 g. sulphamerazine.)

Group 2.—"Streptotriad" tablets (each containing 265 mg. sulphatriad and 65 mg. streptomycin sulphate) in dosage for adults of 2 tablets six-hourly for four days only (total 2.08 g. streptomycin and 8.5 g. sulphatriad).

Group 3.—Streptomycin tablets in dosage for adults of 2 250-mg. tablets six-hourly for four days only (total 8 g. streptomycin sulphate).

A fourth group of patients was started on symptomatic treatment only, but the first two patients remained ill so long that this was, temporarily at least, abandoned.

The numbers in each group are small because so many patients had had some specific treatment before admission and were therefore excluded from the trial. However, before treatment was begun each patient had a careful clinical evaluation, including daily inspection of the stools, a rectal swab, and three stools taken at the bedside, inoculated into desoxycholate medium and incubated immediately; in addition each stool passed during the treatment and for a few days thereafter was bacteriologically examined.

Results

Group 1 consisted of 12 patients—5 *Sh. flexneri* (types I, II, or VI), 5 *Sh. sonnei*, and 2 from whom no shigellae were isolated. In 7 out of 10 proved cases fever after admission ranged from 37.2 to 39.2° C. The treatment was started on the second or third day of disease in 8 of the 10 proved cases. The temperature became normal on the first day of treatment in 6 out of 7 febrile patients. In the proved cases the stools became normal between the first and sixth days of therapy except in two instances. Bacteriologically all the cases were free from shigellae after the fifth day of treatment, the *Sh. sonnei* cases taking longer than the *Sh. flexneri* cases to clear up.

Group 2 consisted of 15 patients—10 *Sh. flexneri* (types I, II, III, or IV), 2 *Sh. sonnei*, 1 *Sh. schmitzii*, and 2 bacteriologically negative. Fever after admission in 8 out of 13 proved dysentery cases ranged from 37.5 to 39.3° C. The treatment was started on the second or third day of disease in 9, on the fourth or fifth day in 2, and on the seventh and ninth days in 2. The temperature became normal on the first or second day of treatment in all 8 febrile cases. The stools became normal in appearance between the third and eighth days, mostly on the fifth or sixth day. Bacteriologically the stools became negative after the first day of treatment

7 of the 10 *Sh. flexneri* infections, on the third and 4th days of treatment in 2, and in the remaining case only after a subsequent course of chloramphenicol. The 2 cases of *Sh. sonnei* infection became negative on the first and second days of treatment and the case of *Sh. schmitzii* on the third day.

Group 3 consisted of 21 patients—13 *Sh. flexneri* (types I, II, III, or VI), 4 *Sh. sonnei*, 1 *Sh. etousae*, and 3 bacteriologically negative. Of the 17 confirmed dysentery cases, 14 had fever ranging from 37 to 39.4° C. (11 above 37.5° C.). The treatment was started in 17 cases on the third to fifth day of disease, and in 1 on the sixth day. The temperature became normal in 12 of the 14 febrile cases on the first or second day of treatment, in 1 on the third, and in one on the fourth day. The stools became normal in appearance between the third and seventh days of treatment in 13 cases; in 3 cases (1 *Sh. flexneri* and 1 *Sh. etousae*) the stools remained semi-solid until discharged, bacteriological cure being delayed as well. Bacteriologically the stools became negative between the first and fourth days of treatment in 9 of the 13 *Sh. flexneri* infections, and 3 were still positive on the fifth, sixth, and seventh days respectively; all 4 cases of *Sh. sonnei* infections passed the organism for two to seven days, and the *Sh. etousae* case for four days after the start of treatment. In the bacteriologically negative cases the stools were normal between the fourth and ninth days of treatment (see table).

Chemotherapy in Successive Groups of Cases of Bacillary Dysentery

Group	Treatment	No. of Cases	Range of Ages	Type of Shigella			Result in Proved Cases	
				Flexneri	Sonnei	Not Isolated	Day of Treatment Stools Normal and No. of Cases	Day of Treatment Stools Negative and No. of Cases
1	Sulphatriad	12	2–66 (av. 27)	5	5	2	2nd–6th (all except 2)	1st–6th (all; but earlier in Flexner cases)
2	Streptotriad	15	17–57 (av. 35)	10	2	2 (1 Schmitzii)	3rd–8th (all, but mostly 5th or 6th)	*Flexneri*: 2nd, 7; 3rd–5th, 2; Later, 1 *Sonnei*: 1st–2nd, 2 *Schmitzii*: 3rd, 1
3	Streptomycin	21	18–37 (av. 26)	13	4	3 (1 Etousae)	3rd–7th, 13 Later, 5	*Flexneri*: 1st–4th, 9; Later, 4 *Sonnei*: 3rd–8th, 4 *Etousae*: 5th, 1

Discussion

Although there were some differences in the ages of the patients in the various groups, as well as in the day of disease on which specific treatment was started, the groups on the whole were reasonably comparable. It is clear that a certain therapeutic effect was obtained in each group, and that bacteriological cure was achieved earlier than full clinical cure.

In groups 1 and 2 the *Sh. flexneri* infections responded fairly well; it would seem that sulphonamides were certainly effective in *Sh. flexneri* infections, although in a few the bacteriological cure was delayed. The response of *Sh. sonnei* infections, on the other hand, to sulphatriad treatment in group 1 was poor; 2 of these patients were young children (2 and 6 years of age) a possible adverse factor—but this finding is in harmony with experience in other longer series of cases. In group 2, on the contrary, the 2 cases of *Sh. sonnei* infection responded rapidly to streptotriad treatment.

On comparing the results in groups 2 and 3 it was somewhat surprising to find that both *Sh. flexneri* and *Sh. sonnei* infections responded better to the streptomycin-sulphonamide combination than to the much larger dosage of streptomycin alone. Out of 13 cases of *Sh. flexneri* infections in group 3, 8 were still positive after the first day of treatment, as compared with 3 out of 10 in group 2. The single case of *Sh. etousae* infection also cleared rather slowly after streptomycin treatment.

Quicker and better results may be obtained with the relatively cheap streptomycin-sulphonamide tablets (streptotriad). This drug appears to be effective also in *Sh. sonnei* infections.

In this trial streptotriad gave better results in both *Sh. flexneri* and *Sh. sonnei* infections than the much more expensive streptomycin treatment, in which nearly four times the amount of streptomycin was used per case.

Conclusions

In countries where *Sh. flexneri* infection is prevalent and where the organism has not yet become resistant to sulphonamides, fairly good results can be obtained by the use of absorbable sulphonamides such as sulphatriad, provided that patients are not allowed to become dehydrated.

Summary

The treatment of bacillary dysentery was studied in small groups of cases in Zagreb, using three different chemotherapeutic agents.

A cheap compound consisting of three absorbable sulphonamides and a small amount of streptomycin proved to be superior (*a*) in Sonne dysentery to the absorbable sulphonamides alone, and (*b*) in both Flexner and Sonne dysentery to a much larger dosage of streptomycin alone.

We are grateful to Professor F. Mihaljević for his advice and for his help in this investigation, and to Messrs. May & Baker Ltd. for supplying the products used.

In a pamphlet entitled *Smoking: The Cancer Controversy* Sir R. A. FISHER, Sc.D., F.R.S., sets out his views on the question. They may perhaps be summarily expressed by quoting the following sentence: "The curious associations with lung cancer found in relation to smoking habits do not, in the minds of some of us, lend themselves easily to the simple conclusion that the products of combustion reaching the surface of the bronchus induce, though after a long interval, the development of a cancer." The pamphlet consists mainly of material that has appeared in the *British Medical Journal*, *Centennial Review*, and *Nature*, together with a note of the author's views on some statistics of inhaling tobacco smoke. It is published by Oliver and Boyd for 2s. 6d.

Medical Memoranda

Survival After Cardiac Arrest

The purpose of this report is to show that cardiac massage for cardiac arrest can be successfully carried out elsewhere than in a properly equipped hospital.

CASE REPORT

A primigravida aged 22 had been delivered normally at 41 weeks of a living male child by her own doctor in a nursing home at 10.20 a.m. on December 3, 1957, after a short labour of three and a half hours.

At 11.20 a.m. there was a sudden brisk blood loss of 40 oz. (1,140 ml.) while the placenta was still retained *in utero*. Obstetric aid was summoned. Ergometrine had not been given. On receipt of a call for assistance, 2 bottles of group O rhesus-negative blood and transfusion apparatus were taken to the nursing-home.

On arrival at 11.52 a.m. the patient was found to be pale and shocked, with a blood pressure of 86/50 mm. Hg. The foot of the bed was raised, ergometrine, 0.5 mg., was given intravenously and morphine, ½ gr. (10 mg.) by hypodermic injection; blood was taken for grouping, and this was dispatched to a laboratory for urgent cross-matching.

Meanwhile a blood transfusion was set up in each arm and two bottles of unmatched group O rhesus-negative blood was given. By 12.55 p.m. her condition had improved considerably and a measured blood loss of 46 oz. (1,300 ml.) had been replaced by two bottles of blood. The pulse rate was now 80 a minute and the pulse pressure was good, but the blood pressure could not be taken as there was a drip set connected to each arm.

It was now learned that the patient's blood group was AB, rhesus not known, and two bottles of group A rhesus-negative blood had arrived from the laboratory.

As the placenta could not be removed by Brandt–Andrews technique, it was decided to remove it manually under anaesthesia. Atropine, 1/100 gr. (0.65 mg.) was given intravenously via the transfusion needle and a further ½ gr. (10 mg.) of morphine was given hypodermically because the patient was restless.

Chloroform was administered by open mask at 1.30 p.m. but laryngeal spasm occurred almost immediately. The mask was therefore removed; the patient soon took a breath of air and started breathing again with a slight stridor. The mask was replaced and more chloroform was given to deepen the level of anaesthesia and to get the patient past this stage of excitation, but her pulse, which had been good, became thready and irregular. She became pale and cyanosed, and her heart stopped beating at 1.34 p.m.

Nikethamide, 2 ml., was given intramuscularly, but auscultation of the heart and palpation of the carotid arteries confirmed that the heart had stopped beating. The chest wall was therefore opened by an incision in the fifth left intercostal space through the skin, muscle, and parietal pleura, which did not bleed. The left lung immediately collapsed and exposed the heart, which was arrested in diastole. After squeezing the heart three times, it began to beat four minutes after cardiac arrest, but soon stopped again. Then 1 ml. of a 1 in 1,000 solution of adrenaline was injected into the heart muscle and further cardiac massage was carried out.

By 1.39 p.m. the heart was beating spontaneously at 108 a minute, but tended to fail as the patient was not breathing. At 1.40 p.m. artificial respiration was started by external chest compression; but its efficacy was doubtful, as the left lung had collapsed and the mediastinum had shifted over to the right. Means of intubation and inflation with oxygen were available, but in the heat of the moment these could not be found. Fortunately, the patient began spontaneous deep respiration about eight minutes cardiac arrest and the left lung began to flap in and the large chest wound.

The placenta was now removed manually without anaesthesia, as the patient was quite unconscious brought the total measured blood loss to 3 pints (1,7 which had been replaced by three bottles of blood.

A further injection of ergometrine, 0.5 mg., was intravenously before the hand was removed from the and there was no more frank vaginal bleeding.

At 2.15 p.m. the hospital anaesthetist and surge duty arrived at the nursing-home in answer to our call. The patient was intubated and positive-p ventilation with oxygen was carried out while the che was closed. At 2.55 p.m. the patient was transfer ambulance to University College Hospital.

In hospital the chest wound was reopened anaesthesia, the patient being inflated with oxygen t an endotracheal tube. The pericardium was inci release any haematoma which might be present, bu a small quantity of straw-coloured fluid escaped; th cardial wound was left open to drain, and a rubbe was inserted into the base of the pleural cavity thr separate stab wound low down in the axillary line tube was connected up under water for siphonage t expansion of the left lung and to drain away exudate.

The patient was returned to the ward unconscio just responding to painful stimuli. The respiratory ra 40 a minute with an increased tidal volume; blood p was 170/90; limbs spastic, with very brisk tendon r and bilateral extensor plantar responses. The endot tube was removed and a Guedel airway was well to Tracheotomy was not performed.

Intravenous triple-strength plasma, started in the t was continued in order to reduce the cerebral o resulting from the anoxic episode. Two bottle given in two hours, followed in the next 24 ho 300 ml. of sucrose 50% in four divided doses. S cooling, with ice packs to the exposed skin surfac carried out to prevent hyperpyrexia resulting fr cerebral anoxia. The rectal temperature was mai at 34–35° C. for seven days.

The Guedel airway was removed after eight hours sciousness was regained quite suddenly after 48 hou the patient began to speak and take food by mouth.

The only serious complication during the puer was a large right-sided pleural effusion which was by aspiration. Despite the unsterile cardiac massa infection occurred in her chest and the wound heal

The spasticity in her limbs gradually disappeared the ninth day all C.N.S. signs were completely norm she was continent of both urine and faeces. S walking well without assistance on the 14th da electroencephalogram taken on the 15th day revea abnormally slow dominant rhythm. She was see psychiatrist on the 21st day, and, although he detecte mental retardation, her parents declared that they find no change in her personality.

COMMENT

Cardiac massage is feasible even when a pati not in an operating theatre; there should b hesitation in opening the chest when the heart be ceased.

C. A. B. CLEMETSON, M.A., B.M., M.R.C.O
Obstetric Hospital,
University College Hospital, London.

On June 1 the Ministry of Health took over fro Ministry of Agriculture, Fisheries, and Food respon for the production of vitamins A and D, hydrolysed p (used for intravenous therapy and other medical pur and magnesium glycerophosphate.

Reviews

COMPARATIVE ANATOMY OF NOSE

The Comparative Anatomy and Physiology of the Nose and Paranasal Sinuses. By Sir Victor Negus, D.Sc.(Manchester), M.S.(Lond.), F.R.C.S.(Eng.), F.R.C.S.(Edin.), F.R.C.S.(Ireland). (Pp. 402+xv; illustrated. 70s.) Edinburgh and London: E. and S. Livingstone, Ltd. 1958.

It is not always easy for man to accept the idea that in the process of evolution the bodily mechanisms, the faculties, and even the emotional reactions which he has inherited from much humbler members of the animal kingdom may work less effectively by the time they reach him. As Negus says in his latest study of the comparative anatomy of the nose and accessory sinuses, "It is a mistake to consider man as at the pinnacle of the animal kingdom on physical grounds. . . . If an Olympic Games were organized, open to all vertebrates . . . man would not gain even a Bronze Medal." Sometimes the original purpose of a bodily mechanism has been obscured by the use to which it has been put in man. This was revealed by Negus in his first great study of the respiratory tract, *The Mechanism of the Larynx* (1927). As a result of his careful investigation of this organ in animals as well as in man he was able to prove that the prime function of the larynx was to act as a valve and so guard the lower respiratory tract against the entry into it of anything but air, and that the voice was a later and less vital by-product of the laryngeal mechanism. The importance of this observation has become apparent in recent years by the life-saving tracheotomy which bypasses the useless larynx in bulbar palsy, and the cuffed tracheotomy tube which takes over the lifeguard action of the laryngeal valve.

Once again Negus has used the Hunterian method to study the respiratory system, this time the upper respiratory tract with its nasal passages and associated air sinuses. While it has long been appreciated that the nose is used for olfaction as well as for conditioning the inspired air on its way to the lower respiratory tract, attention in man has been directed mainly towards the air-conditioning mechanism; and Negus pays tribute to Proetz's extensive studies of nasal physiology. However, as Negus points out, olfaction is the reason for the existence of the nasal organ, which is why he devotes the first part of his new book to the nose as an olfactory organ, ending this section with a detailed consideration of the organ of Jacobson, which he confirms as an accessory organ of olfaction.

The next two sections deal with the function of the nose in respiration, and describe in some detail the filtering and air-conditioning mechanism of the nose. This is followed by an account of ciliary action in the respiratory tract and an important section on the exchange of fluids in the respiratory tract. Many of the problems dealt with in this part of the book apply also to the mucous membrane lining the whole of the respiratory tract, for the mucosa of the lower respiratory tract is subject to the same mechanisms, so far as ciliary action and fluid exchanges are concerned, as the nasal mucous membrane.

In the section on the paranasal sinuses the view is advanced that the sphenoidal and frontal sinuses exist in many animals to assist olfaction; while the ethmoidal air cells, which are found only in higher apes and man, are regarded as the result of restriction of the olfactory area. The maxillary sinus is looked upon as an unwanted space. None of the other functions formerly ascribed to the sinuses is thought to be important.

Negus concludes that the nose of many vertebrate animals is extremely effective for humidification, for olfaction, and for rapid transference of adequate air currents. In comparison the nose of man is a rather poor affair, though it is adequate for his needs.

Besides putting forward new views on the nasal mucous membrane and on the function of the paranasal sinuses, Negus has collected together a great deal of information on the normal behaviour and mechanism of the respiratory tract. As this tract is more frequently affected by disease than any other part of the body, certainly in Great Britain, the book should be in every medical library; and all who have a special interest in the respiratory tract will need a copy handy for frequent reference. This original and thought-provoking work will not only give us a better understanding of respiration and of olfaction, but it will stimulate further research into the behaviour of the respiratory tract in health and in disease.

TERENCE CAWTHORNE

PREVENTIVE MEDICINE IN WAR

Medical Department, United States Army. Preventive Medicine in World War II. Volume IV. Communicable Diseases Transmitted Chiefly Through Respiratory and Alimentary Tracts. Prepared and published under the direction of Major-General S. B. Hays. Editor in Chief: Colonel J. B. Coates, jun., M.C. Editor for Preventive Medicine: E. C. Hoff, Ph.D., M.D. Assistant Editor: Phebe M. Hoff, M.A. (Pp. 544+xxi; illustrated. $5.50.) Washington, D.C: Office of the Surgeon General. 1958.

"Montgomery says that the 8th Army won but Rommel claimed the victory for dysentery, but, as the Germans learned at El Alamein, dysentery can still win battles when hygiene discipline on one side is slack." Sir Sheldon Dudley's aphorism at the heading of chapter XVII might be used as the text for this whole volume: the substitution of the word "disease" for "dysentery" would perhaps make the quotation more apposite. Many wars have been won not so much by the skill at arms of the contestants but on the perfection of the efforts to control disease. World War Two is no exception.

This volume, the first of several on the subject of preventive medicine, contains a vast amount of data collected from all over the world where American troops were stationed and/or fighting. We read the constant repetition that hygiene in the field is of paramount importance to an effective fighting force; we learn but little that is new regarding the aetiology or the control of communicable disease. The text follows the general pattern of the American method of describing disease as it affects the armed Forces. It is, in effect, a collection of separate monographs on many communicable diseases, with a natural military bias, to which some twenty-one experts contributed. Consequently there is a deal of repetition of the axiomatic truths of disease control. At the same time there is ample evidence of the close attention to detail which characterizes all publications emanating from the Medical Department of the United States Army. Much of the information, however, contained in the text will be found in any medical book on the subject. As an instance—though there were but thirteen cases of cholera with two deaths in World War Two among white American troops, sixteen pages are given up to a description of the disease,

including a survey of cholera in the Army from 1832 onwards, a repetition of the general orders for the prevention of water-borne disease, and a note on the comparative value of cholera vaccine as against strict hygienic precautions.

The analysis of the various influenza outbreaks in 1942–5 emphasizes the devastating effect of this disease on military manpower. With 189,000 cases in the Army as a whole, of which 137,000 occurred in the United States and 50,000 overseas, the virologists gained considerable experience of the efficacy of the influenza vaccines. As it was possible to compare equal and fairly large numbers of troops, one-half protected by vaccine and one-half unprotected, the results certainly seemed to point to the efficacy of the vaccine used.

Good advice is given in the preface. All commanders are exhorted to demonstrate vigilance, planning, and foresight in the control and prevention of disease. The description of the enormous effect on manpower of the communicable diseases is evidence enough of the wisdom of this advice and of the overriding importance of preventive medicine as it affects an army in the field. The donning of a uniform gives no protection from disease, but discipline and the intelligent application of well-organized methods of prevention, both individual and in the mass, can go a long way towards keeping disease within bounds.

It is of interest to note that, though disease still ranks first among the major categories of military casualties (disease, battle casualties, and non-battle casualties in that order), for almost the first time in the history of a major war disease caused fewer deaths than battle or non-battle casualties.

The story of the defence put up by the medical profession against these "enemies within the ranks," and the lessons learnt from these efforts, make this volume a most valuable addition to our accumulated knowledge, useful to soldier and civilian alike.

J. C. A. DOWSE.

CANCER OF THE BREAST

International Symposium on Mammary Cancer. Proceedings of the Second International Symposium on Mammary Cancer, held at the University of Perugia, July 24-29, 1957. Edited by Lucio Severi, M.D.(Perugia). (Pp. 871+liv; illustrated. £7 5s.) Perugia: Division of Cancer Research. 1958.

This is a complete account of the proceedings of the Second International Symposium on Mammary Cancer, held at the University of Perugia in July, 1957. The contributors were invited from all parts of the world and included such well-known names as Haddow, Haagensen, and Mühlbock.

The book is divided into two parts. The first deals with cancer of the breast in human beings, and the second with cancer of the breast in animals. Each section occupies roughly half of the volume. Although there are a great many papers on cancer of the breast in human beings, there did seem to me to be a lack of work on clinical subjects, though, of course, it is quite extraordinary that in such a limited field it is possible to produce a volume consisting of 854 pages. It would be impossible, and also invidious, to select any papers from this extremely comprehensive survey, but I am sure that this account of the symposium will be a standard reference-book for anyone working on neoplasms of the breast during the next few years.

W. P. GREENING.

BOOKS RECEIVED

Review is not precluded by notice here of books recently recei

The Collected Works of C. G. Jung. Edited by Sir Herbert R… Michael Fordham, M.D., M.R.C.P., and Gerhard Adler, Ph… Vol. 9, Part II. ***Aion. Researches into the Phenomenolo… the Self.*** Translated by R. F. C. Hull. (Pp. 244+xi; illustra… 32s.) London: Routledge and Kegan Paul. 1959.

The Principles and Practice of Electrotherapy and Act… therapy. By Bryan O. Scott, M.R.C.S., L.R.C.P., D.Phys.M… (Pp. 314+viii; illustrated. 27s. 6d.) London: Will… Heinemann Medical Books Ltd. 1959.

Medical Terms. Their Origin and Construction. By Ffran… Roberts, M.A., M.D., F.F.R. Third edition. (Pp. 92+… 6s.) London: William Heinemann Medical Books Ltd. 1959.

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The Dictionary of National Biography. 1941-1950. Ed… by L. G. Wickham Legg and E. T. Williams. (Pp. 1,031+… £5 5s.) London: Oxford University Press. 1959.

Postural Drainage and Respiratory Control. By E. Winif… Thacker, M.C.S.P. Second edition. (Pp. 62+ix; illustra… 10s. 6d.) London: Lloyd-Luke (Medical Books) Ltd. 1959.

The Medical Secretary in Medical, Hospital, or Dental O… By Kenneth B. Collin and R. Forrest Colwell. (Pp. 391+… illustrated. $5.95.) New York: The Macmillan Company. 19…

Indian Council of Medical Research. Special Report Se… No. 33. Proteins in Food. By S. Kuppuswamy, M.Sc., … Srinivasan, D.Sc., F.R.I.C., and V. Subrahmanyan, D.… F.R.I.C., F.N.I. (Pp. 290+iv. Rs. 12.) New Delhi: Ind… Council of Medical Research. 1958.

A Short Textbook of Radiotherapy for Technicians and Stude… By J. Walter, M.A., B.M.(Oxfd.), M.R.C.P.(Lond.), F.F… D.M.R.E.(Camb.), and H. Miller, M.A., Ph.D.(Camb.), F.Inst… Second edition. (Pp. 527+xi; illustrated. 56s.) London: J. … A. Churchill Ltd. 1959.

Psychosomatic Methods in Painless Childbirth, Hist… Theory and Practice. By L. Chertok. With foreword … Professor W. C. W. Nixon, M.D., F.R.C.S., F.R.C.O… Translated by Denis Leigh, M.D. (Pp. 260+xvi. 35s.) Londo… Pergamon Press. 1959.

L'Auto-immunisation en Pathologie. Étude Experimen… sur la Pathogénie des Glomérulonéphrites, des Encépha… myélites et des Syndromes Hémolytiques Acquis. By Simo… Stadtsbaeder. (Pp. 185; illustrated.) Brussels: Éditions Ars… 1959.

Age and the Working Lives of Men. An Attempt to Rel… the Statistical Evidence to its Practical Shape. By F. Le G… Clark, M.A. (Pp. 67. 3s.) London: The Nuffield Foundati… 1959.

Memoirs of the Society for Endocrinology. No 6. ***Implan… ion of Ova.*** Proceedings of a conference held at the G… Foundation, London, W.1, on November 27, 1957. Edited … P. Eckstein. (Pp. 97+vii; illustrated. 30s.) London: Cambri… University Press. 1959.

Social Work in Tuberculosis. By Margaret Coltart, M.… A.M.I.A., Helen Raine, B.A., and Elizabeth Harrison. (Pp. 1… 12s. 6d.) London: Chest and Heart Association. 1959.

Elementary Medical Therapeutics. By G. F. Walker, M.D… F.R.F.P.S.(Glas.), D.C.H., M.R.C.P.(Lond.). (Pp. 69. 7s. 6… Bristol: John Wright and Sons, Ltd. 1959.

Major Endocrine Disorders. By S. Leonard Simpson. Thi… edition, with the collaboration of A. Stuart Mason and G. I. M… Swyer. (Pp. 459+vi; illustrated. 50s.) London: Oxfo… University Press. 1959.

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BRITISH MEDICAL JOURNAL
LONDON

THE INDWELLING CATHETER AND URINARY SEPSIS

Continuous drainage of the bladder by indwelling catheter has become an accepted practice in the treatment of certain forms of urinary retention. Used with discretion in cases awaiting operation or in which some recovery of functional activity is subsequently expected, it is a convenient alternative to intermittent catheterization. Nevertheless, while the risk of introducing infection by the latter method is widely recognized, the danger of sepsis from indwelling catheterization is less clearly appreciated.

Unfortunately, when continuous catheter drainage is employed for more than three or four days bacteria almost invariably appear in the urine, and the organisms are often of potentially harmful species. Though the hazards of intractable cystitis and rapidly spreading sepsis are to some extent diminished by the maintenance of a free outlet for the infected urine, they none the less exist, and ascending infection of the upper urinary tract may sometimes lead to death.

Scrupulous attention to asepsis may avert the introduction of organisms at the time of catheterization, but it is regrettable that supplementary measures to prevent subsequent infection are sometimes neglected. Theoretically infection spreads either through the catheter or round it; consequently precautions should be taken to preserve sterility both at the urethral orifice and at the distal end of the catheter. All glass connexions, rubber tubing, and receptacles attached to the catheter should be sterilized before use, and an antiseptic dressing applied round the external urinary meatus. Despite these precautions infection is prone to spread through the film of exudate which forms in the urethra in response to the presence of the catheter.

Some urethritis is an inevitable accompaniment of the indwelling catheter, but its intensity appears to be related to the instrument's size, motility, and composition. Red rubber catheters are notoriously irritant, while those made of latex, though better tolerated, are liable to collapse if aspiration is required to relieve blockage. Both disadvantages are overcome by some of the newer plastics that can be boiled, such as "neoplex" and polyvinyl-chloride ("portex"); these, while flexible, are sufficiently rigid to enable them to be retained securely in the urethra. Opinions differ on the best size, for, whereas too large a catheter may damage the urethral epithelium, a smaller one may slip in and out too easily and excite an undue reaction. The latter drawback may be partly overcome by the use of an ingenious catheter devised by N. Gibbon[1] consisting of a length of portex tubing. Though conveniently supple, the rigidity of this material is sufficient to allow it to be firmly secured to the penis without slipping and also to provide a drainage channel of maximum size in relation to the thinness of its walls. A further advantage claimed by Gibbon is that the catheter, which is essentially a 5-foot (150-cm.) length of plastic tubing, is light to handle and can be attached directly to the drainage receptacle, thus minimizing the risk of infection from without.

While the choice of catheter and method of application may diminish the chance of urinary sepsis, other measures are also needed if freedom from serious infection is to be maintained. Chemotherapy while the catheter is in place should be given, and therefore less attention is paid nowadays to antibacterial instillations and lavage. Recently E. H. Kass and H. S. Sossen[2] have emphasized the value of acetic acid as a bacteriostatic agent and advocate irrigation of the bladder with a dilute solution (0.25%) throughout the period of catheter drainage. This necessarily introduces the need for an additional irrigation channel in the catheter and incurs the disadvantage that the patient has to be connected to a reservoir in addition to a drainage receptacle. Nevertheless these authors claim that intermittent instillations (controlled by an electromechanical valve attached to the outlet tubing) have been successful in more than 100 cases and that in some it has been possible to leave the catheter *in situ* for as long as 60 days without infection occurring. From a practical standpoint, however, it may be wondered whether such treatment can be satisfactorily managed outside special institutions such as spinal-injury centres, where the prevention of sepsis may well be of vital consequence.

In reflecting on the refinements of catheter drainage over and above the obvious precautions against introducing infection, one cannot but derive some solace from the fact that clinical behaviour often belies the bacteriological implications. The paramount principle in the avoidance of spreading sepsis is to provide a free passage for the potentially infected urine. So long as reasonable sterility is maintained, the immediate consequences are seldom likely to prove serious.

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TREATMENT OF BACILLARY DYSENTERY

The treatment of bacillary dysentery was revolutionized some fifteen years ago by the use of the poorly absorbed sulphonamide sulphaguanidine, especially in the Middle East, with its preponderance of the relatively severe Flexner dysentery.[1] Later this was replaced by sulphonamides that are absorbed even less readily—succinylsulphathiazole and phthalylsulphathiazole. But these had to be given in unpleasantly large quantities (up to 18 g. daily for an adult). Meanwhile the absorbable sulphonamides were found to be equally effective, though their liability to produce renal blockage in dehydrated patients, a particular risk in warmer countries, limited their use. In recent years the sulphonamides have fallen into disfavour because of the high proportion of resistant strains encountered, especially of *Shigella sonnei*. In different series these have amounted to 32%,[2] 38%,[3] and 56%.[4] Streptomycin orally, 1 g. to 2 g. for an adult daily for three or four days, is now commonly prescribed in hospitals, and is more effective in the treatment of both Flexner and Sonne dysentery than sulphonamides. Although streptomycin-resistant shigellae can be produced fairly readily *in vitro*,[5] and such strains may be met with in practice, they do not yet seem to be a major problem, and a second course of streptomycin is often effective if the first course fails.[2]

For some years it has been known that chloramphenicol[6] and oxy- and chlortetracycline[7] in quite small doses are highly efficient drugs for treating bacillary dysentery, but their possible side-effects and high cost have severely restricted their use. Tetracycline is more active *in vitro* against *Sh. sonnei* than either oxy- or chlortetracycline,[8] and recently bacteriological cure was reported in 94% of 130 cases of Sonne dysentery with a three-day course of tetracycline.[9] In another report dosage as low as one-quarter to one-eighth of the standard dosage of tetracyclines was shown to be effective[10]—namely, 5–10 mg./kg. body weight daily.

The high cost of the broad-spectrum antibiotics has been thought justifiable in order to clear hospital beds quickly, but for treatment at home streptomycin is more appropriate. Even this is expensive for the mass treatment of a mild infection like Sonne dysentery; consequently it is best prescribed with discrimination and only when specific treatment is necessary. In the poorer tropical and semi-tropical countries, where dysentery, moreover, is often a much more serious disease, the economic factor may rule out the use of streptomycin entirely for mass treatment. It is possible that a working compromise may be found in a combination of streptomycin and sulphonamides. Elsewhere in this issue of the *Journal* two controlled trials are reported with tablets containing a mixture of soluble sulphonamides and streptomycin. Dr. P. J. Taylor, in Cyprus, found this treatment gave better clinical results than a full course of phthalylsulphathiazole and was both cheap and more acceptable to the patient. Dr. J. Fališevac and his colleagues, in Zagreb, report that in the treatment of Flexner and Sonne dysentery the results obtained with the compound tablets were better than those obtained with streptomycin alone, although the latter treatment was much more expensive.

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THE SOMATIC MUTATION HYPOTHESIS OF CANCER

The hypothesis according to which tumours are due to mutations of somatic cells was first advanced by T. Boveri[1] in 1902 and has been much debated ever since—as it was at the International Cancer Congress in London last July. The value of a hypothesis on the aetiology of disease depends largely on the degree to which it provokes thought and stimulates further research. Judging it by those standards, Dr. Peyton Rous does not consider that the somatic mutation hypothesis is showing up particularly well at the present time. In fact, this great pioneer in cancer research has recently taken pen to paper and written a provocative and critical article on "Surmise and Fact on the Nature of Cancer."[2]

It is now nearly 50 years since Peyton Rous published his surprising discovery that some forms of sarcoma in chickens could be transmitted by cell-free filtrates containing a virus.[3,4] He was then in his early thirties, and it is sufficient to add that this epoch-making contribution to the literature of cancer has stimulated a vast amount of research in which Peyton Rous himself has taken a leading part and in which he is still happily and actively engaged. In his latest article Peyton Rous criticizes the somatic mutation hypothesis chiefly for its barrenness of ideas and its discouraging effect on research workers. "A hypothesis is best known by its fruits." What, he asks, have been those of the somatic mutation hypothesis? Peyton Rous thinks that it has "resulted in no good thing as concerns the cancer problem but in much that is bad." It seems to have led to the depressing conclusion that cancer is something "inherent," and, this being so, the most that doctors will ever be able to do is to palliate such malignant tumours as may have become disseminated in the body and to avoid new carcinogens as well as the old. But the most serious of all the results of the somatic mutation hypothesis has been its effect on research workers. Peyton Rous says in picturesque language that "it acts as a tranquillizer on those who believe in it, and this at a time when every worker should feel goaded now and again by his ignorance of what cancer is."

Without discussing in detail these outspoken criticisms of a fashionable hypothesis by this greatly respected research worker, it is worth pointing out that he seems now to be doing for us something similar to

what we on this side of the Atlantic formerly did for him. To explain this we must recall that for the first ten to fifteen years after Rous first published his work on the transmission of fowl tumours by cell-free filtrates many American pathologists were unwilling to accept these "filtrable tumours" as being true sarcomas but argued that they might be inflammatory lesions resembling tumours but essentially different in their nature. So the matter stood until W. E. Gye and J. E. Barnard[3-6] published their papers in 1925 claiming that ultramicroscopic viruses, combined with an intrinsic chemical factor, were concerned in the production not only of the Rous sarcoma but also of other malignant tumours. This reawakened interest in the nature of the Rous sarcoma, and Gye with his great persuasive powers began to convince American pathologists that the Rous tumour was indeed a genuine malignant growth. Gye succeeded in his mission of proving to Americans that the Rous tumour was a sarcoma, though he never won much support in Britain for his view that a virus was the aetiological factor in human cancer.

Meanwhile, for another ten to fifteen years cancer research workers in Europe and America took an active part in the newly developing science of virology until the discovery of chemical carcinogens began to divert the channel of research in other directions. Other approaches to the cancer problem began to open up, until the point was reached a few years ago when it seemed as if virus research was played out and would have in future only a very limited application to human cancer at any rate.

Such was the position on both sides of the Atlantic until a few years ago, but during the last decade a new interest in viruses has developed in the U.S.A. So the tide has turned. In the late 1920s Gye and his co-workers crossed the Atlantic with missionary zeal to convert Americans to the virus hypothesis. Now in the late 1950s the discoverer of the Rous filtrable tumour returns from the New World to the Old to persuade us not to become too absorbed with somatic mutation hypotheses or chemical carcinogens but to leave a place still for virus research.

PHTHISIS AND PREGNANCY

Twenty years ago the advent of pregnancy in a woman suffering from pulmonary tuberculosis was a matter of serious concern to both obstetrician and chest physician. To-day, however, the latter has confidence in the powerful therapeutic weapons at his command; and the former is apt, perhaps a little complacently, to consider that any problems involved are medical, social, or administrative, but almost never obstetrical. This outlook receives some support from a recent report[1] issued by the Joint Tuberculosis Council. It states firmly that pregnancy has no deleterious effect on tuberculosis—to which might be added the proviso that the infection receive effective treatment. Fortunately all the usual therapeutic measures, excepting only pneumoperitoneum but certainly including thoracic surgery, can be safely employed during pregnancy. The pregnant woman with active phthisis should be nursed in a sanatorium or in a chest unit with isolation facilities, and her antenatal care must be the responsibility of the obstetrician. Ideally, delivery would also take place in the same institution in a special maternity unit. The good results obtained by such a policy have been well described,[2,3] but in only a few areas in this country has this policy been put into practice. The report goes on to state that therapeutic abortion and sterilization are not often indicated to-day, but that they may have to be considered when there is severe impairment of pulmonary function, or a very adverse psychiatric reaction, or in "the inability of a multiparous woman to undertake the additional work of looking after another baby without precipitating a breakdown." The first of these indications may be reasonable, but the second may be prevented from arising by full reassurance and explanation to the patient and her relatives. And obstetricians may regard abortion for the third reason as of doubtful legality, since it is recommended to overcome what is primarily a socio-economic problem.

It is now the general practice to *x*-ray the chests of all pregnant women, but the report advises the avoidance of tomography and screening, adding that radiography is rarely required more often than three-monthly and in any case should be avoided if possible during the last trimester. Routine radiographic examination presents the considerable advantages of disclosing unsuspected disease, of permitting the tracing and testing of contacts, and of providing a warning that the baby may have to be protected against infection.

So far as the baby is concerned, it is fortunate that the drugs used to treat the mother seem to be without adverse effect on the foetus. If the mother's disease is active the baby must be separated from her immediately after birth, vaccinated with B.C.G., and segregated until Mantoux conversion. The main problem—to place the baby where he will be safeguarded against tuberculosis and will receive good nursing and attention while separated from his mother—is again administrative and social rather than medical. The report suggests that a children's hospital may be the most appropriate place. If satisfactory segregation cannot be arranged it is recommended that the baby be given isoniazid prophylactically, 3–5 mg. per lb. (6.6–11 mg. per kg.) of body weight daily. As soon as segregation has been arranged the drug is discontinued and the baby is vaccinated with B.C.G., returning only after Mantoux conversion. The report ends with the encouraging news that trials are being made of an isoniazid-resistant B.C.G. vaccine: if these prove successful it might allow the baby to be vaccinated and then given the prophylactic drug until conversion, thus making segregation unnecessary.

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[4] —— ibid., 1911, **13**, 397.

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[6] —— —— ibid., 1925, **2**, 117.

Correspondence

Partial Gastrectomy

SIR,—In 1911 Dr. Eugene Polya[1] described a retrocolic method of reconstruction, which he had used in six cases following gastrectomy for extensive carcinoma. He left us in no doubt about the position of the anastomosis just beyond the duodeno-jejunal flexure ("ebenso wie bei der Mayo'schen no loop Gastroenteroanastomose"). Mr. Hermon Taylor (*Journal*, May 2, p. 1133) has wisely reminded us of the mechanical excellence of this operation and shown how it can be combined with a gastric resection adequate for the relief of duodenal ulceration. I wonder, however, whether the remarkable absence of recurrent ulceration in Mr. Taylor's series is to be explained entirely by the extent of the gastrectomy. It seems unlikely that a three-quarters resection combined with an ante-colic anastomosis would have given such good results. May it not be that in the human as in the dog the first few inches of the jejunum have a relatively very high resistance to peptic juice?

Finally, it should be possible to lower the incidence and severity of the "dumping" symptoms experienced by Mr. Taylor's cases by reducing the extent of the resection and adding a vagotomy. Personal experience of carrying out this type of operation during the past few years has greatly encouraged me to continue with it. Certainly the time seems ripe for a return to Polya's operation as he originally described it.—I am, etc.,

Liverpool, 1. NORMAN GIBBON.

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Diabetes in the Tropics

SIR,—I admire the courage of Dr. Frederick Wolff in asserting (*Journal*, June 6, p. 1473) that temporary diabetes may be considerably commoner than is generally realized. It has always seemed to me that such a view is inevitable if one accepts the multiple aetiology of the disease and the fact that diabetic patients who have no available insulin are in the minority. Nevertheless, published case reports of reversibility are few, and the problem is far from simple. The literature has recently been reviewed by Harwood,[1] who, however, fails to mention either the detailed examination of the subject by Goadby[2] or the impressive cases cited by Phillips.[3] Most physicians in charge of diabetic clinics must have experience of occasional patients who appear to recover spontaneously from even severe disease, though it is doubtful whether these should be labelled "cures." In some, impaired carbohydrate tolerance persists, and the value of six-monthly glucose tolerance tests, as suggested by Dr. Wolff, is doubtful.

Similarly, I do not believe that failure to recognize reversibility is due solely to prejudice in favour of "insulin, the anti-diabetic panacea." It may well be that insulin therapy could eventually lead to irreversible disuse atrophy of a pancreas originally capable of secreting the hormone, but there are other equally important considerations. One is the impossibility of determining in the majority of patients the *immediate* cause of the breakdown in tolerance. Another is our ignorance of the way in which such a breakdown occurs, associated as it is with extreme variability in the rate of onset of symptoms. Both set a limit on therapeutic efficiency, but where recognition of a cause and prompt treatment are possible[3] restoration of blood sugar regulating mechanisms may be complete.—I am, etc.,

London, S.E.1 A. PATON.

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Haemarthrosis

SIR,—About a year ago, a very house-proud lady in her middle forties had a prepatellar bursitis. It settled slowly, but I thought this was because she gave it inadequate rest: her house was spotlessly clean and she was always baking. She was always cheerful when we met, but her husband told a very different tale.

He came regularly for "cytamen" (cyanocobalamin) and told me of her crabbiness and how she no longer wished to go out and meet friends or go to the club. Some months passed—she had a holiday and improved considerably—then an effusion developed in her knee. On aspiration it proved to be a haemarthrosis, and the orthopaedic surgeon agreed that the small ecchymosis visible was a spontaneous venous haemorrhage. At this stage she herself began to complain of fatigue and lack of concentration—and knew she was short tempered but didn't know why. I tried various sedatives and tranquillizers, which did no good. She then began to sleep really badly and weep at the slightest provocation. I was baffled, as was my principal. There seemed no reason for this behaviour—physical or psychiatric. I suggested a psychiatric opinion—which was refused. My principal persuaded her to see a general physician. At this stage her ecchymoses were larger, and the correct diagnosis was reached. The blood picture was normal, and the *x*-rays of the knees showed only minor arthritis. The vitamin-C saturation test confirmed the diagnosis—as did the treatment with vitamin C.

After this I looked very carefully at some patients in the area—people who lived largely on bread because the country buses were so infrequent and shops difficult to reach. None had frank scurvy, but several improved when I persuaded them to eat more fruit and fresh salads.

I was taught that scurvy usually occurred in old people living in garrets, alone. I think a state of suboptimum vitamin-C nutrition is more common than usually taught—but I don't think I can prove it as there are so many variables. This letter is not meant as a snipe at Mr. J. N. Wilson (*Journal*, May 23, p. 1327); it is just that his article brought my error to mind.—I am, etc.,

Stokesley, Yorks. JOHN EARLE.

Radiation and Leukaemia

SIR,—I read with great interest the article entitled "Adult Leukaemia" by Drs. W. M. Court Brown and R. Doll (*Journal*, April 25, p. 1063) and your leading article, "Radiation and Leukaemia," on p. 1095 of the same issue. The leukaemogenic effect of radiation is now an established fact. In individual cases of leukaemia, we, however, fail to incriminate radiation as a cause.

We recently analysed data on 307 cases of leukaemia followed up during the ten-year period 1949–58.[1] There were only 67 cases in the first five-year (1949–53) and as many as 240 in the second five-year period. Dependable history pertaining to previous exposure to any form of irradiation was obtained in 106 patients investigated during the last two years. History of exposure to *x* rays for diagnostic purposes was obtained only in 13 instances; in these patients exposure was due to diagnostic radiography of chest and spine. Approximate amount of irradiation thus received could not have exceeded 1 r. The types of leukaemia in these 13 cases were as follows: chronic myeloid 9, acute undifferentiated 1. None had received any form of therapeutic irradiation. In the remaining 201 cases the possibility of exposure of a larger proportion of subjects to any larger dosage of irradiation was unlikely.

It appears that in these cases of leukaemia in Indians the possibility of radiation acting as a leukaemogenic agent must be very remote.

In this context it may be pertinent to present the distribution of our cases in four economic groups. Based on per-caput income, the patients were classed into the following four groups:

Group A where the monthly family income per caput was Rs. 100 or more.
Group B where the monthly family income per caput was Rs. 50–99.
Group C where the monthly family income per caput was Rs. 20–49.
Group D where the monthly family income per caput was less than Rs. 20.

In the whole series the percentages of cases belonging to groups A, B, C, and D were 14.3, 9.1, 23.4, and 53.2 respectively.

Leukaemia has been reported to be more frequent in the rich than in the poor.[2,3] Data in the present series do not suggest that leukaemia is particularly common among the wealthier sections of the Indian community. The large number of patients in the poorest group would indicate that the disease cannot have any predilection for the rich.—I am, etc.,

Calcutta School of Tropical Medicine, India. J. B. CHATTERJEA.

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Subject in Search of a Name

SIR,—Professor L. J. Witts's letter (*Journal*, May 2, p. 1190) has drawn attention to the fact that a comparatively new method of investigation is proving increasingly useful as a means of discovering what factors influence the prevalence of health and disease. The method perhaps needs a name, but the subjects in which it is most used—namely, epidemiology, human genetics, and physical anthropology—should surely be distinguished by separate names, as should also the subjects which make most use of the findings—namely, public health, child health, and industrial medicine. Since the relevant investigations necessitate surveying numerically large groups of people, it might be appropriate to speak of "the survey method."—I am, etc.,

Department of Social Medicine, Oxford University. ALICE M. STEWART.

SIR,—We have "paediatrics" for children and "geriatrics" for old people. Surely the right word for medicine applied to whole races (ἔθνοι) is "ethniatrics." It is not very euphonious, but it is less cumbrous than some of the suggestions in your issue of June 6 (p. 1477), and it readily gives derivatives analogous to "paediatrics" and "paediatrician," which the others do not.—I am, etc.,

Oxford. ALASDAIR LIVINGSTON

SIR,—Professor L. J. Witts asked (*Journal*, May 2, p. 1190) for a distinguishing adjective for those medical activities in which a group of patients is studied. I suggest "syncritic."

The adjective is new. The noun syncrisis is old. In Greek it meant (i) a putting together, compounding; (ii) a comparing, comparison. Thus it expresses the basic method of work which I think Professor Witts has in mind.

The *Oxford English Dictionary* gives for syncrisis, after "? *Obs.*", three quotations: 1657. J. Smith, *Myst. Rhet.* Syncrisis is a comparison of contrary things, and divers persons in one sentence. 1673. *Ess. Educ. Gentlewom.* All knowledge is increased by syncrisis. 1674. M. Lewis. *Ess. Educ. Youth.* All instructions ought to be by syncrisis, that is, by comparing what we are to learn with what we know. These uses of the noun give hope that the adjective would "mean what we choose it to mean."

"Syncritic medicine" would not, however, include the whole of public health or epidemiology. Practitioners of both have much to do in addition to studying groups. This fact merits recognition by those of their colleagues who work in other branches of medicine and also in planning undergraduate and postgraduate teaching.

Statisticians may object to "syncritic" for something which they feel is nothing but applied statistics. Certainly in syncritic medicine logical thought based on an awareness of statistical principles is essential; simple statistical tests are often necessary; and the expert can soar away on flights of higher mathematics. Yet "statistical medicine" would scare many who are allergic to algebra. If they looked into Bailey's *The Mathematical Theory of Epidemics* they might well miss among the hieroglyphics his appeal from his "swivel chair" for co-operation from "shoe leather" epidemiologists.

Moreover, Hippocrates and Sydenham and many doctors since have practised syncritic medicine with no statistics or just a few "little sums." Their contribution to medicine has been great. A list of names that occur to me would be too long and tedious for others. It would mention authors of books old and new, lecturers and teachers, besides many friends with whom I have worked in hospitals, in laboratories and offices, and "in the field" in towns and villages all over the world. Your issue of May 30 had articles on hypertension (pp. 1361 and 1368) and staphylococcal cross-infection (p. 1374) which would surely rank as syncritic medicine. Incidentally, the paper on cross-infection implicitly provided a strong argument in favour of *medical* administrators.

Many doctors in public health, general practice, and hospitals practise syncritic medicine, as M. Jourdain spoke prose, without knowing it. That is as it should be. Syncritic medicine should be a way of thinking which permeates all medicine. Specialists in it there may be, both those who can command a large team and handle large figures and those who prefer an intensive study with a small team. Were they musicians the former would doubtless conduct orchestras and the latter play chamber music such as a late Haydn quartet where the lead is tossed around between equal and independent friends. The specialists must not make syncritic medicine an esoteric specialty with an iron-curtain empire. It must be an integral part of medicine and contribute to advance in many of its branches. Professor J. A. Ryle once told me that he had this aim

when he went from Physic at Cambridge to Social Medicine at Oxford.

This letter suggests a word and expresses my own views, but it smacks of self-advertisement. I dislike that as much as you do, Sir. I do not want the publicity which public health physicians need in the communities which they serve and I should prefer to remain pseudonymously "Hippocraticus." However, since you insist, I am, etc.,

Long Ashton, Nr. Bristol. ALLAN M. MCFARLAN.

Antenatal Records

SIR,—There is frequently some difficulty in recording antenatal findings with clarity in general practice, and the rubber stamp here illustrated, which I had made six years ago, has answered the purpose very well, though a minor adjustment might make it more convenient to use. It just fits into one line of the standard E.C.7 record card or the new card for midwives' and doctors' antenatal notes, and, besides making reference of past findings easier, it serves as a reminder of the main features to be recorded on each visit. The stamp

GEST.	FUNDUS	B.P.	URINE		G'D.	FOETUS		POSITION	ENG.	WEIGHT
WKS	WKS	/	ALB	SR.		MVT	H			

provides space for recording the following findings: Gestation in weeks; fundal height in weeks; blood pressure (this bracket needs to be a little wider for clear recording in practice); albuminuria; glycosuria; ankle oedema; foetal movement; foetal heart; foetal position; foetal head engagement in pelvic brim; mother's weight.

If anyone should wish to have one made, I imagine any rubber-stamp maker would do it, and the cost, as far as I can recall, was in the neighbourhood of 25s. However, I should advise the use of slightly wider brackets for blood pressure and weight at the expense of such records as can be indicated simply with a + or O.—I am, etc.,

Kingston-on-Thames. CHARLES STEER.

Munchausen Syndrome

SIR,—Although there is some disagreement about the proper method of treating cases of the Munchausen syndrome, their management is obviously easier if the diagnosis is made rapidly. For this reason I describe another such case which has not so far been recorded. I have traced the admission of this man on 16 occasions to 14 hospitals, mainly in London and the Midlands, during the past seven years, of which he has spent a total of over nine months in hospital and almost four years as an inmate of H.M. prisons. He has used many pseudonyms; the surnames usually have the initial G., while the first names he has given include Frank, Robin, and Sidney.

He was probably born in 1923. Like several other of these "peregrinating problem patients,"[1] he gives his occupation as a long-distance lorry driver or driver's mate and presents himself for admission with symptoms of a severe exacerbation of peptic ulceration. He often describes a recent large haematemesis, but there has never been shock, anaemia, or a strongly positive test for occult blood in the faeces. On several occasions, however, the patient has been noted to have a low blood pressure (90/60). As he is also pigmented (a feature noticed on clinical examination as early as 1952) and sometimes describes this as of recent development, he has been investigated on two occasions for Addison's disease, with negative results. The presence of rather small testes with some apparently related symptoms has prompted further fruitless endocrine investigations. On two admissions he has ascribed the pigmentation to his Red Indian ancestry, and some reference to Canada occurs in most of the recorded histories. His forearms are scarred by self-inflicted cuts, for which his usual explanation is that he was scratched by barbed wire when trying to escape from a Japanese prisoner-of-war camp. He has three surgical abdominal scars. Two he relates, probably correctly, to partial gastrectomy and appendicectomy, while the third he has attributed variously to an operation for perforated peptic ulcer, to a shrapnel wound, and to a bayonet thrust. Hysterical behaviour has frequently been noted and he has been a patient in two mental hospitals.

His stays in hospital have varied from one day to five weeks; during most admissions barium meal studies have been made which confirm the past gastrectomy but show no other abnormality. He has also submitted to sternal marrow puncture, lumbar puncture, gastroscopy, testicular and skin biopsies, and pre-sacral air insufflation.

On the majority of occasions he has discharged himself from hospital, thus completing the classical picture of this condition as described by Asher.[2]—I am, etc.,

St. Thomas's Hospital, London, S.E.1. H.-J. B. GALBRAITH.

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Personal Medical Record Disks

SIR,—I have read with interest the letters in the *Journal* during the last few months on the dangers inherent in treatment by injections or inoculations, and I have not been surprised by the rising tide of unrest which they appear to indicate. The article by Dr. H. J. Parish on personal medical record disks (*Journal*, March 7, p. 640), together with these letters, suggests that the medical profession is seeking a way out of this position.

As a medical records officer, I am specially interested in this problem. There is a place for Dr. Parish's disks, but I believe a personal record book, of much the same size as a driving licence and containing basic information on the patient's immunization, blood group, etc., would be the answer. Such a book could quite easily record details of his admissions to hospital, with the condition treated or the operation performed coded according to the International Classification. I have a prototype of this kind.

Diabetics, epileptics, patients attending antenatal clinics, and those suffering from haemophilia or Christmas disease, to mention a few, all carry cards giving important details. To record these in a personal record book must be an advantage. I believe this is a most important requirement after some ten years of the National Health Service. New drugs are constantly being used, and some of them, such as the corticosteroids, demand that their administration should be signalled "on the patient" for his safety.—I am, etc.,

Hammersmith Hospital, London, W.12 J. SLOWE, Medical Records Officer.

Acroparaesthesia and the Carpal Tunnel

SIR,—Are not some of your correspondents (*Journal*, June 6, pp. 1472–3) making rather heavy weather over the differentiation between brachial neuritis due to cervical spondylosis and pain in the arm and hand resulting from the carpal tunnel syndrome? Surely pain in the arm and hand secondary to cervical spondylosis increases during the day when the patient is up and about, is aggravated by neck movements, but

relieved by bed rest. In the case of the carpal tunnel syndrome the symptoms are the reverse. The patient is woken up in the early hours of the morning by pain and paraesthesiae in the fingers and hand of medial distribution, and pain in the arm. The pain progressively disappears during the course of the day and the patient is usually symptom-free on going to bed. Furthermore, movement of the neck does not give rise to pain. In the odd case where the symptoms are equivocal, when the condition is due to the carpal tunnel syndrome an injection of a small quantity of prednisolone provides rapid relief.

I have not mentioned the thoracic outlet syndrome because I agree with the present teaching of the neurologists that symptoms previously attributed to this syndrome are almost always due to carpal tunnel compression.—I am, etc.,

London, W.1. E. J. CRISP.

Pancreatitis

SIR,—The thing that bothers us about Mr. M. A. Birnstingl is not his facts and figures, but his commas. We feel there is a lot of good sense in his paper (*Journal*, April 11, p. 938), if one remembers that to Mr. Birnstingl "Chronic Pancreatitis" does not mean chronic pancreatitis but carcinoma of the pancreas, misnamed chronic pancreatitis due to undue reliance on misplaced biopsy. We doubt if the older clinicians really intended such a complicated neologism. In fact, if Mr. Birnstingl can produce a chart in which the diagnosis is labelled "Chronic Pancreatitis" we shall be delighted to stand him "dinner" when next in London. Of course a dinner dressed in inverted commas might prove to be a Barmecidal feast.—We are, etc.,

OLIVER FITZGERALD.
St. Vincent's Hospital, Dublin. PATRICK FITZGERALD.

Rubella in Pregnancy

SIR,—Dr. Julia Bell's letter in your issue of May 16 (p. 1302) should make a few correspondents blush. Written with restraint and to the point, it makes one wonder that such a letter should be necessary in a scientific journal.—I am, etc.,

Norwich J. P. CARLILE.

*** This correspondence is now closed.—ED., *B.M.J.*

Hypnosis for Patients with Burns

SIR,—Since Dr. O. H. E. Bayles's letter (*Journal*, April 4, p. 923), our original patient with double heart arrest (*Journal*, March 7, p. 624) has returned to hospital for minor surgery. Having heard of our use of hypnosis for our other burns patient who had developed cardiac arrest (*Journal*, May 9, p. 1242), he asked if he could be operated on under hypnosis instead of under local anaesthesia. He was quickly and easily hypnotized, but it was impossible to produce analgesia. It is therefore probable that hypnotic analgesia would have been equally difficult to elicit on the previous occasions when he developed cardiac arrest following anaesthesia. This is not to deny that hypnosis would have been of the greatest use for tranquillizing the patient pre- and post-operatively, but neither can it be denied that anaesthesia was probably unavoidable for the surgical procedure.—We are, etc.,

BASIL L. FINER.
University Hospital, Uppsala, Sweden BENGT O. NYLÉN.

POINTS FROM LETTERS

Food-poisoning and Food Hygiene

Dr. MAIR E. M. THOMAS (Public Health Laboratory, Edmonton, London, N.9) writes: Dr R. Blowers (*Journal*, May 2, p. 1182) is right to demand a chapter on hygiene in the recipe books. There will be plenty of room for this chapter if a list of popular but dangerous recipes is excluded from such books. Cookery features in the press and on the radio are as much at fault as the recipe books in tempting the public to use raw eggs (*Salmonella*), unboiled gelatin (*Staphylococcus pyogenes*), and the stockpot (*Clostridium welchii*).

Obituary

JOHN REID, M.D., F.R.F.P.S., D.P.H.

Dr. John Reid, formerly physician superintendent of the County of Lanark Infectious Diseases Hospital, Motherwell, died on May 10 at the Vale of Leven Hospital, Dunbartonshire. He was 76 years of age.

John Reid was born at Glasgow on December 22, 1882, and was educated at the High School and University of that city. He graduated M.B., Ch.B. in 1905, and from the outset of his professional career his interest lay in the field of infectious diseases. However, before taking up the specialty of his choice, he wisely equipped himself with a wide post-graduate training in general medicine and surgery. Junior appointments were held at Glasgow Royal Infirmary; Oakbank Hospital, Glasgow; and the Glasgow Maternity Hospital. He was also assistant bacteriologist in the corporation bacteriological laboratory. He obtained the D.P.H. of the Scottish Conjoint Board in 1910 and proceeded M.D., with commendation, in the following year. In 1922 he was elected a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow, and subsequently became an examiner in infectious diseases for that body. In 1911 he became physician superintendent of the County Infectious Diseases Hospital, Motherwell, and, apart from Army service during the first world war, held this appointment continuously until his retirement in 1948.

In 1911 the County Hospital was a small institution of 100 beds, quite inadequate in size to meet the demands made upon it. Dr. Reid set himself the task of having the hospital enlarged and pressed this campaign with energy and enthusiasm. In this he was successful, and by repeated extensions the accommodation had increased to 232 beds by 1926. The reputation of the hospital grew even more rapidly and its standing as a fever hospital was recognized far beyond the boundaries of Lanarkshire and Scotland. As a hospital administrator he earned a high reputation, and his opinion on such matters was greatly in demand. He was made senior hospital superintendent in Lanarkshire, and in 1934 he was invited by the Secretary of State for Scotland to become a member of the Scottish Departmental Committee on the Training of Nurses.

However, it is as a clinician that John Reid will best be remembered. The result of his labours was a constant source of satisfaction to him, and each problem which presented itself was met with the zeal and resourcefulness that one would expect to find in a man dedicated to his work. Living as he did on the hospital premises, he could be found in the wards or the laboratory of his hospital at almost any hour of the day or night. As a member of the British Medical Association—he was chairman of the Lanarkshire Division in 1928-9—he took every opportunity of visiting other countries in a professional and social capacity. He attended the Annual Meetings of the Association in Canada in 1930 and in Australia in 1935. On these occasions he made a point of inspecting all hospitals that were within convenient reach, particularly fever hospitals, where he was always willing to

receive new ideas and impart the benefits of his own experience.

Dr. Reid was basically a shy man who avoided publicity, and a manner that was sometimes brusque concealed a warm and kindly personality. To the general practitioners in Lanarkshire he was both a skilled clinician and a sagacious counsellor. This was evident by the number of times his services were requested when illness occurred in the practitioners' own families. In the recurring smallpox alarms before and during the last war his advice was much in demand, and on these occasions his sound clinical judgment and wise caution were qualities appreciated by members of the public health medical staff. He was not a prolific writer on medical subjects, and to appreciate his profound knowledge of clinical medicine one had to be in his company during a ward round. As a clinical teacher he always had a crowded classroom, and at a time when students had a choice of lecturers many elected to travel considerable distances to attend the class at Motherwell. His former assistants and students in many parts of the world will mourn his passing and remember with gratitude their association with the County Hospital. Dr. Reid leaves a widow and one son, Dr. J. A. W. Reid, who is a graduate in medicine of the University of Glasgow.

R. S. D. writes: John Reid, of the County Hospital, was a name well known to a generation of general practitioners in Lanarkshire, where he was held in great respect as a clinician and a hospital administrator. When he took charge of the hospital in 1911 infectious diseases presented a vastly different picture from what is seen to-day. Typhoid fever was a common endemic disease; diphtheria, meningitis, and puerperal infections all too frequently caused loss of life. The situation was aggravated by the deplorable housing conditions which then existed. At this time and for many years afterwards there was no general hospital in Lanarkshire, the most densely populated county in Scotland. Many cases that were not strictly infectious diseases were admitted to the County Hospital. Against this background John Reid built up a reputation as a clinician which has become almost legendary. Quiet in manner, yet his personality was a very positive one. Sparing of words, he was forthright in discussion, and was most intolerant of hypocrisy and any form of exhibitionism. He set a high standard to his staff and was a severe taskmaster. Any shortcomings on the part of his juniors were corrected in no uncertain manner. At the same time his attitude was essentially friendly and helpful. He was held in great affection by his assistants, who must have vivid memories of the countless cups of tea that were dispensed in the residents' quarters around midnight, when he would hold forth on the dangers and pitfalls that lay in the path of the fevers clinician. His interest in his work never flagged. In 1947, a few months before his retirement, he tackled the unprecedented poliomyelitis epidemic with the energy and enthusiasm one would only expect to find in a much younger man. His hospital practice was both his work and his recreation. It was for this reason that he took unkindly to the comparative inactivity of compulsory retirement. His passing leaves memories that will long be cherished by his former assistants. Sincere sympathy is extended to his widow and son.

H. P. ANDERSON, M.B., Ch.B.

Dr. H. P. Anderson, who was in general practice at Kinross for over 30 years, died at his home there on May 31.

Hope Pitcairn Anderson was educated at George Heriot's School, Edinburgh, ending a distinguished career there by becoming dux of the school. During the first world war he served in France as an artillery officer, later transferring to the Royal Flying Corps and gaining his wings. On returning to Edinburgh he graduated M.B., Ch.B. at Edinburgh University in 1923. In the following year he was president of the Royal Medical Society, and it was in this sphere that his keenly analytical mind and attention to detail made him such a formidable debater and polished speaker. He was house-physician to the late Dr. W. Hope Fowler in the Royal Hospital for Sick Children and then house-physician to the late Dr. (later Professor) Edwin Matthews in Edinburgh in Edinburgh Royal Infirmary. These two great physicians and teachers helped in no small measure to foster and develop the clinical sense which Hope Anderson possessed and which he was to use with such skill in the years to come. On going to Kinross in 1925 he entered into partnership with Dr. H. C. Gibson, of Milnathort, and on the latter's death took over the whole practice. During his early years in Kinross he devoted a large part of his time to the welfare of ex-Service men and was president of the local branch of the British Legion. An active member of the Perth Branch of the British Medical Association, he was president of the Branch from 1936 to 1938. He was a keen student of human nature, and had a wide knowledge of literature and art. He also had many other interests in private life, and some years ago took up photography, which he indulged in with his usual enthusiasm and minute attention to detail. He was a keen angler, and he and his wife spent many a happy evening on Loch Leven. Hope Anderson was indeed "the beloved physician" whose keen sense of justice and great human understanding made him a very wide circle of friends in all walks of life. His untimely death has created a profound sense of grief and loss in Kinross and for many miles around. He leaves a widow and a son, Dr. Derek P. Anderson.—A. K. M.

Medico-Legal

PRIVILEGE AND MEDICAL CASE NOTES

[FROM OUR LEGAL CORRESPONDENT]

On April 20 the Court of Appeal refused to order the disclosure of a verbatim copy of some medical case notes (*The Times*, April 21). At the beginning of 1957 an employee of Cammell Laird & Co. developed meningitis after an accident, and entered Birkenhead Hospital for treatment. Subsequently the employee commenced an action against the company in respect of the accident, and an important issue in the case was whether the meningitis was traumatic or infective. The employee's solicitors, in preparing his case, took a verbatim copy of the relevant case notes at the hospital. The defendant company sought an order of the Court for the disclosure of this verbatim copy. This was refused, and the refusal was upheld on appeal.

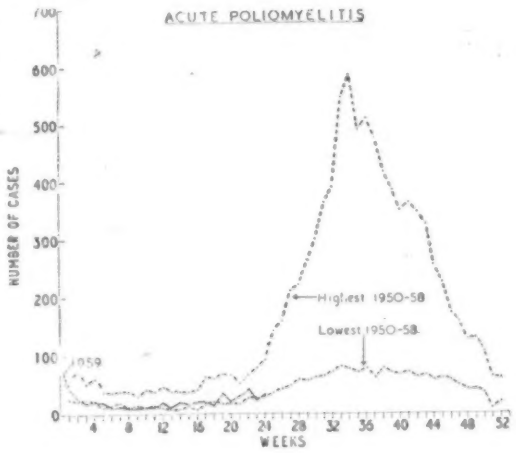
In any civil action the general rule is that before trial each party must disclose all relevant documents to the other side and allow them to be inspected. Certain classes of documents, however, are privileged from such disclosure, one of such classes being documents prepared by the litigant's legal adviser for the purpose of the litigation in hand. But documents made by other advisers are not so privileged. Thus if the original case notes had been in the possession of the litigant or his solicitors they would have had to produce them. But the copy made by the solicitors was a document prepared by legal advisers for the purpose of litigation, and was thus privileged from production. In this case the original case notes were in the possession of the hospital, and so the plaintiff could not be compelled to produce them, since a party to an action can never be compelled to produce documents not in his possession.

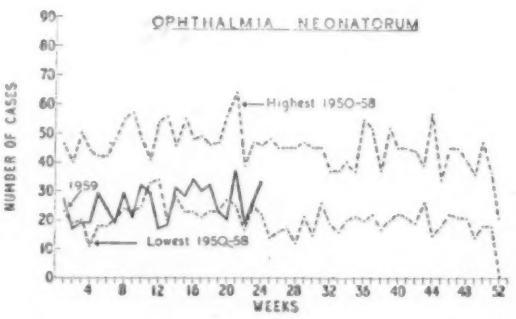
The appropriate process to secure production of the case notes to the defendant in this case was by *subpoena duces tecum* issued against the hospital authority, ordering it to produce the notes at the trial. For the litigant this process has the disadvantage of additional expense, but the hospital cannot refuse to obey it. The position would be the same if an individual doctor possessed the original case notes. The penalty for failure to obey a subpoena is attachment for contempt of court.

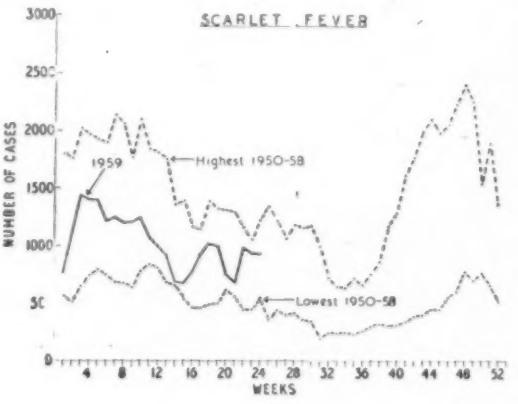
Vital Statistics

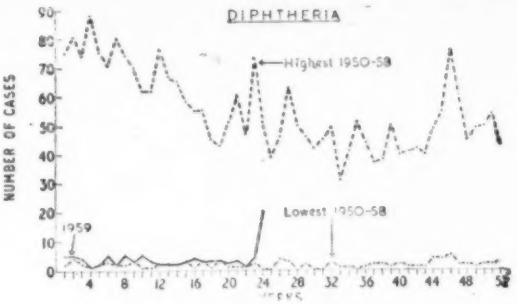
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1950–8 are shown thus - - - - - -, the figures for 1959 thus ———. Except for the curves showing notifications in 1959, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Any Question

Thumb-sucking

Q.—*A girl aged 5½ sucks her thumb so persistently that her lower permanent incisors are displaced. Is a permanent deformity likely to result? What is the psychological significance of the habit?*

A.—At 5½ years the lower permanent incisors are just erupting. Despite quite marked displacement there may be no permanent deformity. Orthodontists do not view the habit of thumb-sucking in such a serious light as hitherto. They believe that it is rarely the primary cause of a *permanent* deformity. The important point is that if thumb-sucking is superimposed as a temporary feature on a dentition which is developing normally the tongue will reposition the teeth when the habit ceases. The frequency and persistency of the habit have to be taken into account. If the habit is continued for several years and the deformity is marked, it will not be corrected naturally if the lower lip adopts a position between the upper and lower incisors. Most children will give up the habit by 8 or 10 years of age, with a little help and persuasion. A simple dental plate may be of value: by insulating the palate it removes the pleasure of sucking. No drastic steps need be taken and a nagging parent makes matters worse.

A sucking habit may well be superimposed on a dentition which is developing abnormally owing primarily to inherited jaw form or to adverse tongue and lip forces. The sucking habit may exaggerate the deformity and only minor natural improvement occurs when the habit ceases.

Persistent thumb-sucking in a child of school age, to the extent of being held responsible for displacement of teeth, is an indication of a need to cling to a form of satisfaction which is normal at an earlier stage of development but which should no longer be appropriate. Such a failure in emotional development, or regression to an earlier stage of development, is indicative of anxiety which may be due to difficulties within the child (e.g., learning problems related to the commencing school situation) or to disturbances of one sort or another in family relationships. It is not only useless to try to stop the symptom forcibly, but it is likely to be positively harmful to future emotional development if its significance is not assessed before treatment is planned. If the thumb-sucking is considered after investigation to have ceased to be significant in itself and to have passed into the realm of "habit," its removal can be facilitated only by the provision of alternative oral satisfactions—for example, sucking or chewing sweets. But every effort should be made to assess fundamental problems before treating persistent thumb-sucking as a habit of little or no emotional significance.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

JUNIOR MEMBERS' FORUM

There was a large attendance at the second Junior Members' Forum held at B.M.A. House on Saturday, June 13. As Dr. R. M. S. MATTHEWS (Essex), the chairman, pointed out when welcoming members, the Forum was not a policy-making body. It had no executive power, but it could make recommendations, and these were taken very seriously. The Junior Members' Forum was a live body for constructive criticisms and new ideas.

Reconciling Views

Dr. D. P. STEVENSON, the Secretary of the Association, also extended a cordial welcome to all those present. The Association, he said, was interested in the problems of junior members. Indeed, the Association relied on its junior members and their successors for its future strength and unity. If at times it had seemed that the Association had not taken as much notice of its junior members as they would have liked, there were certain obvious reasons. First, there was the inherent difficulty of the young member in attending meetings. Secondly, there was always the difficulty of reconciling the views of the unestablished and young members of the profession with the views of the established and older members. Often their points of view were widely divergent, and what had struck him was that the views of the younger members had often been tempered by the fact that they in turn would eventually become senior members of the profession, and that what they considered to be to their advantage to-day might not necessarily be to their advantage in the future.

Chairman of Council's Address

At the conclusion of the official welcome, the Chairman of Council, Dr. S. WAND, addressed the Forum. He stressed that those who worked at Headquarters had the interests of the young practitioner very much at heart. Indeed, their record showed that, and he pointed out that the average age of members of the Porritt Committee was lower than that of any comparable committee set up by professional organizations in the past.

It was the Association's duty to look after the interests of all members of the profession, but it was necessary to bear in mind that the interests of one group might have repercussions on another group. It was necessary to ensure that the lot of the doctor throughout the whole of his professional life, including the incentives available, was fully protected.

The Association was regarded as the most democratic of all bodies, continued the Chairman of Council. "Therefore the movements of policy within the Association are necessarily slow, and I ask for your indulgence." It was often said that those who had been elected to take care of members' affairs were old men who had no longer any interest in the practice of medicine and who did not understand the problems. Dr. Wand assured his audience that with very few exceptions every officer and member of committees of the Association was in active medical practice—and he emphasized the word "active." In spite of this it was realized that problems were being dealt with which for those new to the practice of medicine had a changed pattern, and it was from a body such as the Junior Members' Forum that the Association expected to hear —without punches being pulled—where members felt that there had been failure to recognize their difficulties.

A good deal had been said about unity. Although unity in a profession such as medicine was not possible, when a problem arose it should be debated and a final decision taken, and all members of the profession ought loyally to abide by that decision. If there were public repudiation of majority decisions, such as had happened, it could spell nothing but disaster. Dr. Wand said he was pleased to see so many present, since it indicated that they had what was essential to every doctor—a will to give service.

Problems of Young Members

In the unavoidable absence of Dr. W. E. DORNAN, chairman of the Medical Students and Newly Qualified Practitioners Subcommittee, Dr. J. A. PRIDHAM, its deputy chairman, reported on the work of this Committee, which he described as the oldest of the three committees of the Association which dealt with the problems of the young members. Among the matters being dealt with by the Subcommittee was the compilation of the *Hospital Gazetteer*, which it was hoped would be on sale this year. It would contain particulars of all hospitals which would be of interest to the junior member in selecting a hospital for a resident post. The Subcommittee was carefully watching the situation with regard to the granting of the certificates of satisfactory service which had to be obtained before full registration. Help had also been given to the British Medical Students' Association with their evidence to the Anderson Committee, which was dealing with grants for university students. Following a recommendation by the Forum in 1958, the representation of pre-registered housemen on the Subcommittee had been increased.

Dr. A. B. GILMOUR (London) paid a tribute to the Subcommittee for the work it had done for junior members. Ideas submitted by junior members took time to come to